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REGIUS PROFESSOR OF MEDICINE IN THE UNIVERSITY OF OXFORD; CONSULTING PHYSICIAN TO ST. BARTHOLOMEW'S HOSPITAL.

[Sir Archibald Garrod, having noted the complete revolution which the work of the bacteriologist and protozoologist has produced in the conception of the nature of disease during the last half century, pointed out that the demands of the medical student of the present day run along two separate paths: first, they must acquire a working knowledge of the science upon which medicine, using the word in its widest sense, rests; and secondly, they must study at bedside and in laboratories the signs and symptoms of disease, that they may acquire the technique of the therapeutic measures. He would omit, he said, from his address all reference to the personal characteristics needed for the work of a doctor, while emphasising at the outset the importance of the human aspects of our calling. He would make the scientific side of clinical medicine his theme. He continued:—]

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The student of 50 years ago almost always entered upon his studies with the intention of taking up some branch of practice or of entering one of the public services. Few alternatives were open to him. There were no bacteriologists, pathology was synonymous with morbid anatomy, and the men who, from the end of the eighteenth century onward, had laid the foundations of biochemistry in this country were all practising physicians. They, and others of scientific bent, pursued their researches in the period of waiting for practice and in its intervals, but nevertheless they were pioneers, not only of the medical, but of other sciences also.

Nowadays the position is very different. In addition to the physiologists, most of whom still go through the medical curriculum, not a few qualified men turn aside from the path of practice and devote their lives to teaching and research in the various branches of pathology or in pharmacology.

This has its advantages and its disadvantages. On the one hand, some men of scientific tastes and interests—for whom the work of the laboratory has great attractions, whereas the practice of medicine has none—enter the profession, and by their researches contribute greatly to the advance of our science and art. In that way medicine is the gainer. But, on the other hand, there is real danger that the great majority of men of scientific bent will turn aside and desert clinical work, in order to devote themselves to work in the laboratory. This tendency is increased by the attitude of some of the laboratory workers, who regard clinical medicine as a subject hardly worthy to attract men of scientific ability. So there has been a drift apart of the ward and the laboratory, which is far more pronounced in this country than elsewhere, since it is only recently that complete clinical units, with wards and laboratories under a single head, with trained assistants, have been established amongst us.

It will be my endeavour to convince you that here is abundance of work to be done on clinical subjects by strictly scientific methods; and seeing that much of the information to be sought can only be got by clinical research, it would be nothing short of a disaster if all, or nearly all, those qualified by tastes, training, and opportunities to pursue clinical investigations on such lines should desert the wards for the laboratories.

The study of pure pathology and of the problems of immunity entails experimental investigations by men highly trained in the subjects and the methods employed, in bacteriological technique, and chemical manipulation. Those who devote their lives to such work are most valuable members of the profession; but, on the other hand, the mere fact that a piece of work is done in a laboratory does not make it a scientific research. The routine of clinical pathology is not more scientific than the examination of a chest, the diagnosis of a lesion of the brain, nor even than the careful taking of notes at the bedside.

It is not to be expected that everyone who enters upon the practice of medicine will approach his work in a strictly scientific spirit and with zeal to contribute to the advancement of knowledge, although he must employ scientific methods. It must needs be that the bulk of the members of our calling will, owing to the incessant demands upon them, have little time or opportunity for investigation on broad lines. They must be content, willy-nilly, to carry out the day's work with practical skill and common sense, making good use of what they have learnt from their teachers and from their own experience. Yet not a few of those so circumstanced make important contributions to medical knowledge.

On the other hand, it must not be forgotten that the knowledge upon which the art of medicine is based has been gained by work done on scientific lines, by methods of observation and experiment. All the great therapeutic advances of recent times have been the outcome of scientific investigation; and in medicine, as in other sciences, investigations carried out with no practical aim have proved very fruitful in practical results. It is to scientific research that we owe aseptic surgery and all that it has rendered possible, the conquest of insect-borne diseases, the banishment of the typhoid terror from campaigns, the discovery of the vitamins, and the utilisation of hormones. No better example can be quoted than the history of insulin, from the experiments upon dogs of von Mehring and Minkowski to its widespread benefits in the present day.

[Having referred to the crowded state of the curriculum and deprecated any suggestion that it should be lightened by less attention to anatomy and physiology, Sir Archibald Garrod pointed out that the aims of the practitioner, though they are immediately the making of a diagnosis and the discovery of the appropriate therapeutic measures, must go beyond these; there is the study of disease as it manifests itself in the living human subject—the gaining of new knowledge for the advancement of medicine. Of the science of diagnosis he spoke as follows:—]

THE MEDICAL CURRICULUM AND THE SCIENCE OF DIAGNOSIS.

The science of diagnosis is, in the main, a science of observation, the aim of which is to detect in the living patient processes and lesions which are beyond our reach, but which would, in most instances, be revealed at a post-mortem examination. Yet it rests largely upon post-mortem teachings, and all who aim at becoming capable diagnosticians should take advantage of every opportunity afforded to them of seeing, and whenever possible conducting, such examinations. Such opportunities are most common during student days, and only too many of us regret in after life that we have neglected them; for morbid anatomy, one of the most important subjects in the medical curriculum, can only be learnt by personal observation. Do not forget that there is an immense difference between facts which we *know* and facts with which we are merely acquainted. Facts which we know are not those about which we have read, or have heard lectures, but those which we have observed, apprehended, and confirmed for

*With the consent of the authors all these introductory addresses are reproduced in somewhat abridged form.

ourselves. We need no *memoria technica* to recall a fact which we *know*.

Some diagnostic methods are simple and involve merely the use of senses—of our eyes, ears, nose, and fingers; others require the use of instruments of more or less complexity; and others, again, involve chemical or bacteriological examination of the blood or excreta, by methods usually carried out in the laboratory. It is hard to realise how recent most of our diagnostic methods are. Auscultation and percussion were only brought into use at the end of the eighteenth century; the clinical thermometer came into general use in our hospitals as recently as the 'seventies of last century. Blood counts began in the same decade, and the importance of leucocyte counts was only recognised in the 'nineties. Since then our diagnostic resources have been largely increased. The discovery of the tubercle bacillus, and its ready detection in the sputum of many sufferers from pulmonary tuberculosis, opened the way for wide applications of clinical bacteriology—the detection of various bacteria on the one hand, and the agglutination tests on the other. More elaborate means, such as the Rontgen rays and the electrocardiograph, have rendered our findings far more precise, and we now have methods of testing the functional efficiency of such organs as the liver, kidney, and pancreas.

As long ago as the middle of the last century uric acid was detected, and estimated, in the blood of the gouty, but in recent years methods have been devised which render possible the estimation, not only of uric acid, but also of glucose and urea, in small specimens of blood from a prick in the ear.

All these refinements and advances have not superseded the older and simpler methods. It is as necessary as it ever was that the medical man shall be trained to make use of all his senses, supplemented by the stethoscope and thermometer. A laboratory is not always within reach, and it is often necessary to act before a bacteriological report can be had. Moreover, the older methods have been improved, and pulmonary tuberculosis is now usually diagnosed by auscultation and percussion at a stage at which it would have escaped recognition 50 years ago.

Auscultation and percussion are strictly scientific methods. Consider for a moment how by such means it is possible in very many instances to ascertain beyond all doubt that a patient's lung is consolidated, or that his pleural cavity contains fluid; that his heart is hypertrophied or dilated, or that there is narrowing of a valvular orifice or leakage of a valve. Such diagnoses involve accurate observation and sound interpretation of the signs observed, and the confidence with which we make them is due to confirmation of such diagnoses at many post-mortem examinations.

Lesions of the nervous system often present difficult problems of localisation, for the brain and spinal cord are wholly out of reach of direct examination. Yet by making use of the findings of experimental physiology, and the teachings of morbid anatomy, it is usually possible to make a correct diagnosis of the seat and nature of a cerebral or spinal lesion; just as a man who is thoroughly conversant with the telephone system may, by comparison of observations made in several branch offices, diagnose accurately the place, and form a shrewd notion of the cause, of an interruption in a central office which he cannot visit.

A diagnosis often involves replies to two questions—namely, Where is the lesion? and What is its nature?—but the answers often hang together. For example, the signs and symptoms, in a particular case, point to a lesion of the head of the pancreas, and experience teaches that such a lesion is almost certainly a carcinoma. Yet a diagnosis may be right in one respect and wrong in the other.

There are some people who possess a natural diagnostic insight, and others who acquire such an insight by long experience. The accumulated impressions, derived from cases seen at various times, may point to a right solution. Just as a child spells out the letters of words, and a beginner translates laboriously what he reads in a foreign tongue, so the medical student runs over in his mind the possible causes of an observed sign or symptom. But experience allows such conscious effort to be dispensed with, the foreign words come to convey their meaning directly, the clinical picture points to a correct diagnosis.

One of the dangers which beset the medical student of to-day is that he may be tempted to neglect that thorough grounding in auscultation and percussion and the simpler chemical and microscopic tests which can be made at the bedside, and may come to rely upon reports from the laboratory of examinations which he has not himself carried out. To this danger all examiners in medicine and surgery are keenly alive.

MEDICAL TREATMENT AND NATURAL FORCES.

[Coming to treatment, Sir Archibald Garrod alluded first to the advances in surgery rendered possible by Lister's researches, and indicated that the physician, while unable to obtain definite results comparable to those which follow, for example, the removal of an inflamed appendix, has to help the patient to hold his own whilst Nature works a cure. One of the most important lessons learnt during the last half century was that Nature has provided the patient with power to produce far more potent drugs than any used by our forefathers, but that their utilisation demanded the keenest pursuit of clinical research. The extensive use of serums and vaccines represent, he said, the attempts to utilise Nature's own remedies, and he trusted that in due course it would be possible to give them as pure products and free from undesirable admixtures. The study of dietetics and the discovery of the vitamins, the employment of Rontgen rays, radium, and its emanations, light and ultra-violet rays, electrical treatment, massage and manipulative measures, as well as the nursing methods of the present day he alluded to as the great modern additions to the weapons against disease.]

PURSUIT OF CLINICAL RESEARCH.

So far I have spoken of scientific knowledge and method, as applied to the recognition, control, and treatment of disease, but what I particularly wish to emphasise is the fact that the clinical observer has abundant opportunities for the study of disease as seen in the human subject—in other words, for the pursuit of clinical research. Much of the knowledge so obtained is not to be had from experiments on animals; for a human patient can describe his sensations with greater or less accuracy, and can tell us of the medical history of himself and his family. Such work as that on the sensory nerves which we associate with the name of that great observer, Henry Head, could not be done in any other way.

Although it is established that, in the majority of instances, illness results from the invasion of the body by micro-organisms, vegetable or animal, or by poisons of inorganic origin, and although such immense help has been got from the culture and study of such organisms and of their effects upon lower animals, and by the experimental study of the phenomena of immunity, we cannot learn in the laboratory all that we need to know about disease.

What we call disease is the response of the organism to the invasion of the agents of disease, and, seeing that no two individuals are exactly alike either in structure or in chemistry, sickness does not conform to any single model; each individual case calls for careful observation. Owing, as I believe, to their chemical individuality, different human beings differ widely in their liability to individual maladies, and to some extent in the signs and symptoms which they exhibit. Hence it will be found a useful maxim that there is no such word as "never" in medicine. Rules which appear to be immutable turn out to have their exceptions.

Many idiosyncrasies are obvious and notorious, such as the sensitivity of individuals to special drugs, or particular articles of diet, which have no ill-effects upon others. As examples may be quoted the manifestations of sensitivity to proteins, seen in the various forms of urticaria, in hay fever, and in varieties of asthma. Light also is an agent which affects various individuals in very different ways. Usually beneficent, it produces unpleasant effects upon the skin of some individuals, and to a very few who are victims of congenital porphyrinuria it is a veritable poison.

Again, the minor injuries which are necessary accidents of the wear and tear of life vary greatly in their effects. In the bleeder a trifling knock may produce grave trouble in a joint; in victims of that strange anomaly fragilitas ossium it may cause a fracture; in a gouty subject it may induce an attack. So do our idiosyncrasies and our circumstances contribute to the moulding of our maladies. All this is the true basis of the doctrine of diatheses now unduly neglected.

THE GREAT PIONEERS.

[Here the lecturer, recalling that by clinical observation, controlled by morbid anatomy, almost all the maladies with which we are familiar had been differentiated, enumerated the work of certain pioneers in clinical research whose studies had led to particularly progressive results. Among the famous men whom he particularly brought to the attention of his hearers was Thomas Addison, who was able to diagnose by the close observation of a certain group of associated symptoms, disease of the adrenals, a condition where the diagnoses could be verified in the majority of cases by autopsies. His next example was William Jenner, who differentiated typhoid and typhus fevers from close observation of a series of fatal cases of continued fever which had come under his own observation, in all of which autopsies had been made. He spoke, in connexion with neurology, of Hughlings Jackson, whose "contributions to science, from the discovery of the association of convulsive attacks with lesions of the cerebral cortex to the wide and important generalisations upon which his fame largely rests, were the outcome of bedside observation controlled by morbid anatomy." Other names in the list were those of Parry, Graves and Basedow in connexion with exophthalmic goitre, Brown-Séquard, Marie, Fröhlich, James Paget, Jonathan Hutchinson, W. B. Cheadle, and Harvey Cushing; and he concluded by pointing out to the students that, despite the wonderful work done by these pioneers or because of the new vistas opened out by them, there are still large blank spaces in our knowledge to be filled.]

SCOPE FOR SCIENTIFIC WORK IN CLINICAL MEDICINE.

If, as I have tried to convince you, there is abundant scope for scientific work in clinical medicine, why is it necessary to point this out, and why do we so often hear the contrary opinion maintained, especially by laboratory workers? Is it not because medical men too often do not realise the requirements of scientific method? If we are to hold our own as members of the army of research, we need to see that our work is up to the required standard; that our observations are sufficiently precise, and are confirmed by the method of control; that our statistics will bear examination by statisticians, people whom it is not easy to satisfy, and that our hypotheses are legitimate inductions from facts which are clearly established.

There are, however, obvious difficulties which make it hard and often impossible for the clinician to be as exact in his methods as he would wish. Medicine is always in a hurry. The patient and his friends are only too apt to mistake scientific caution for incompetence; to demand a cut-and-dried diagnosis in an impossibly short time; and to estimate a ready dogmatism above a reasoned uncertainty. Time is often pressing, and the doctor is obliged to act upon very incomplete evidence, lest, whilst he waits for certainty, valuable hours may be lost. He cannot always put his treatment to the test by trying one measure at a time; and, again, he is bound to forego any diagnostic test, or even a thorough examination, if it appears to him that it might in any way be harmful to the patient. These are only a few of the hindering factors which are familiar to all practitioners.

You will have to realise that to a large section of the public all science is under suspicion, and scientific medicine is distrusted. A profession which makes a free gift to mankind of all its discoveries is widely regarded as a close corporation of people who look askance at men cleverer than themselves, merely because they have not a medical education, or because they base their treatment upon heterodox theories. This phase of thought is by no means helpful to him who would advance the knowledge of disease, and, through knowledge, its treatment.

In conclusion, let me repeat that for the clinician, as for the laboratory worker, and especially for both working in coöperation, there is abundant scope for original investigation—that highest product of the scientific spirit. We are not all built to do such work, and there are excellent investigators for whom an obvious practical aim is a necessary stimulus to research; but for those who are content to seek knowledge for its own sake there are great rewards; for the discovery of a new fact, however small a one, or the framing of a conception which throws a beam of light into some dark corner, brings a satisfaction which is without alloy.

Yet the way of the investigator is rough, and there are many disappointments to be faced. In the words of Ecclesiasticus:—

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[Sir Humphry Rolleston commenced his address with a warning against too early specialisation, inasmuch as the medical profession presented for its acolytes a wide choice of activities, comparing in this respect favourably with other professions. He continued:—]

In the first place, with the expansion and rapid development of medicine, there are more opportunities and varied openings than ever before. Secondly, apart from accidents, illness, and grave misconduct, a competence or living wage is within the reach of practically all qualified medical men who choose to work. The panel system has, in spite of the initial forebodings and opposition, really improved conditions for the rank and file of the profession. As a profession medicine does not bring wealth or a great position to more than a few, while it has an immense amount of gratuitous work to its credit, and is exposed to the frequent danger of infection from attendance on the sick and the occasional risk of vexatious legal actions for supposed malpraxis and improper certification of the insane. To enter on the physic line as a means of livelihood is justified by the results, but as a path to great material prosperity the way is long, treacherous, and may land the traveller in a slough of disappointment. In spite of Sir Robert Peel's dictum that "Nothing is so misleading as facts except figures," it may be a comfort to remember that statistics got out at various dates by Sir James

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In the first place, with the expansion and rapid development of medicine, there are more opportunities and varied openings than ever before. Secondly, apart from accidents, illness, and grave misconduct, a competence or living wage is within the reach of practically all qualified medical men who choose to work. The panel system has, in spite of the initial forebodings and opposition, really improved conditions for the rank and file of the profession. As a profession medicine does not bring wealth or a great position to more than a few, while it has an immense amount of gratuitous work to its credit, and is exposed to the frequent danger of infection from attendance on the sick and the occasional risk of vexatious legal actions for supposed malpraxis and improper certification of the insane. To enter on the physic line as a means of livelihood is justified by the results, but as a path to great material prosperity the way is long, treacherous, and may land the traveller in a slough of disappointment. In spite of Sir Robert Peel's dictum that "Nothing is so misleading as facts except figures," it may be a comfort to remember that statistics got out at various dates by Sir James

Paget, Sir Squire Sprigge, and Mr. E. M. Corner show that on an average over 75 per cent. of medical students obtain a qualification, and that according to the first two authorities 66 per cent. of those qualified have reason to be satisfied with their professional success.

[Contrasting the financial rewards of the medical and legal professions, he pointed out that, though the number of briefless barristers was large, the prizes at the Bar were greater and more numerous than in medicine, the position agreeing, therefore, with Adam Smith's dictum that in a perfectly fair lottery those who draw prizes should gain what is lost by those who draw blanks; as the vast majority of medical men succeed in earning a living the winners of great prizes should be exceptional, and so it is. Of the work of the great majority of the medical profession he spoke as follows:—]

GENERAL PRACTICE.

General practice is still, in spite of increasing specialism, the future field of activity for the largest number—probably three-quarters—of qualified medical men, and there is plenty of scope and opportunity. Any medical man or woman can be on the panel for the 15,000,000 insured persons in England and Wales, and the financial and other conditions on the panel are superior to those of its predecessors the clubs and friendly societies. In England there are at present 12,696 men on the panel, or nearly half (46 per cent.) the estimated 27,600 men practising in England, but there are only 434 women on the panel, or one-fifth (19 per cent.) of the 2209 women in practice. For these figures I am indebted to Dr. Smith Whitaker, of the Ministry of Health. This rather striking difference in the sex personnel of panel practice may be in part due to women preferring to confine their work to their own sex and to children. But this is not the whole story, for unfortunately at present the public as a whole have not become accustomed to women doctors and as a rule the panels of women doctors are not crowded. Time no doubt will cure this, as other inequalities, but in the meanwhile women doctors are not finding it so easy to earn a livelihood in general practice as their brothers. The profession received a large influx of women during and of both men and women after the war, and the peak of the wave in qualifications has only recently been reached, so that there is some reason to fear a temporary overcrowding in the profession. A number of official posts in public health, infant welfare, and so forth in this country, in India, in the Zenana Mission, and elsewhere in the mission field are available, in which women doctors can find congenial occupation and a living. It is sometimes thought that the public medical services encroach on the general practitioners' preserves, and in time will lead to their exclusion. But Sir George Newman, who is in the best possible position to know, points out that in reality the reverse is true—

> "For the Poor-law Medical Service has 4000 medical officers for outdoor medical relief, practically all of whom are private practitioners; the post office list of 3500 medical men are all practitioners; out of 1450 medical officers of health, 1100 are private practitioners, and only 350 are whole-time officers; of the 1800 medical men engaged by local education authorities in the inspection and treatment of school-children, 1000 are in private practice; of 1770 certifying factory surgeons, all, hardly with exception, are private practitioners; and the whole of the national insurance service is in the hands of private practitioners."

Some other lines of work allied to general practice may be briefly mentioned. Examining for life insurance is usually a small item in a general practitioner's life, but some men by holding appointments under several offices spend most or even all of their time in this work. It is, of course, true that the chief medical officerships of large insurance companies are usually held by consultants and hospital physicians.

With the progress of medicine to a preventive standpoint the logical importance of establishing periodic overhauls of the adult population may be expected to be more widely recognised and acted on, as in this way the causes of early disorders may be removed and so the sequence of serious results prevented. If and when periodic overhauls, twice or three times a year, become recognised in much the same light as a visit to the dentist is now, a fresh line of work allied to insurance practice will be opened up. Police surgeoncies and appointments to big business firms, to look after their staff, again are nearly always part-time occupations, but in the future it is probable that industrial medicine will bulk more largely than it does at present and provide more berths for medical men who will devote their whole time to this branch of work, which provides much opportunity for interesting investigation. A good example of this is the recent recognition of squamous-celled carcinoma, usually of the scrotum, amongst the "mule-spinners" or cotton operatives, who during their work lubricate with a mineral oil the spindles of the spinning mules. The Home Office's Departmental Committee Report (1926) records 539 cases, 450 of the scrotum.

[Sir Humphry Rolleston next categorised the factors which determined the choice of general practice. Some men, he said, were individualistic and desired to be under no bureaucratic or regimental control; some were influenced by heredity—here he instanced "Georges Clemenceau," the medical ex-Premier of France, and the seventh medical member in lineal descent of a family which followed the profession for 300 years without a break; while the desire to earn sufficient income for marriage was another factor to be taken into account. He continued:—]

DEVELOPMENT OF GENERAL PRACTICE.

With the changes time has brought about, men in general practice who become the guide, philosopher, and ultimately familiar friend of their patients whom they bring into and see out of the world, have also changed, for their medical education and general equipment have greatly improved. They have thus become less dependent on the help of specialists and consultants with whom to some extent they therefore compete. It has been thought by some that eventually general practitioners will become squeezed out by specialists and consultants on the one hand and on the other hand by preventive and social medicine, such as school, tuberculosis, and venereal clinics, and maternity and child welfare centres. But the general practitioner is the essential element in the medical service, and his elimination would be a most serious loss. Just as they have altered in the past so should they accommodate themselves to changing conditions to a larger measure of team-work, to a greater share in preventive medicine, and to take their part in public health organisation. A general practitioner has to possess a knowledge of every branch of medicine, in fact to be in miniature an all-round specialist with the proviso that he also knows his limitations—what he can safely do and what he should leave to others; for in these days, with the great and ever-increasing complexity of medicine, a real all-round specialist is, of course, impossible. This difficulty has to some extent been met by team-work; firms of general practitioners so constitute themselves as to cover the ground of the various branches of medicine, surgery, and gynæcology more or less completely, each partner devoting himself to some particular line of work. Thus in choosing a new partner consideration is given to applicants with such qualifications as a special surgical or even radiological bent, and the existing partners may from time to time take post-graduate courses so as to become recognised locally as experts in the diseases of the throat, eye, urology, and so forth. It is thus possible for a general practitioner to develop into an expert specialist and eventually to set up in a big centre; indeed, his all-round knowledge of the whole art of medicine is a very valuable asset to him as a specialist.

[After pointed allusions to the competition in the sphere of everyday medicine of "amateur doctors" and to numerous cults or "stunts," he warned his

hearers against the too easy dismissal of everything that does not appear orthodox, inasmuch as what in one generation is regarded as the obsession of a crank may subsequently become recognised as a valuable form of treatment. In this connexion he recalled to his hearers the essential part often played in extra-professional success by the imagination of the patient and the force of suggestion, quoting Oliver Wendell Holmes as follows: "So long as the body is affected through the mind no audacious device, even of the most manifest dishonest character, can fail of producing occasional good to those who yield it an implicit or even partial faith."

Sir Humphry Rolleston went on to analyse the prospects and promises of the careers, other than in general practice, open to medical men:—]

SPECIAL CAREERS.

Careers in the Services.

In the past men sometimes entered our profession because, being debarred by bodily defect or failure in negotiating examinations from the executive branches of the army or navy, their ambitions were to some extent met by being medical officers in the services. The call of adventure and itch to travel attract some entrants into the fighting and colonial services; a life of varied interests, an assured rate of pay, and the prospect of a pension to provide for retirement also weighed in the choice of the services, but the shortage in the services at the present time, possibly an aftermath and revulsion from the war, shows that these factors are somewhat in abeyance, and accordingly short commissions of four years or so with a gratuity on leaving, which helps in starting a practice, have been established. The opportunities for research and investigation have much increased in the naval and military medical services, and that devotion to scientific work is compatible with gaining the highest offices in the medical department of the army was shown by the appointment of the late Lieutenant-General Sir William Leishman as Medical Director-General. The new problems in connexion with aviation attract keen men of the kind wanted in the Royal Air Force. Tropical research with its great potentialities is specially open to those in the Colonial Service.

The increasingly active *health services* provide a large number of official positions, not only part-time which, as already mentioned, are chiefly occupied by general practitioners, but whole-time appointments, and these posts are likely to increase in number and importance. Appointments in fever and mental hospitals and sanatoriums are, of course, whole-time, and provide opportunities for research and openings for men who are attracted to these special branches of medicine.

Careers as Specialists.

Wise specialism is of the greatest advantage for the progress of medicine, but its followers should know something about everything medical as well as everything about their own branch. Without taking a reactionary view, there is a danger that specialism may be exaggerated and that parts of medicine which should be within the reach of every competent medical man may be prematurely elevated into a specialty; in ancient Egypt there was a phase (500 B.C.) when each disease had its practitioner who confined his activities to that one condition. To be a clinical specialist has mercenary advantages, for practice comes earlier and the lucrative rewards may be considerable.

The *pathologist*, *bacteriologist*, *serologist*, and *biochemist* belong to a special branch of medical practice which has a progressively increasing scope of activity, as is shown by the overwhelming flood of new work on these fundamental sciences; from a material aspect the recommendations of the Royal Commission on Health Insurance, if carried into effect, will increase the number of official posts available for those whose abilities and temperament render them better suited for laboratory investigations than for clinical practice, and who, therefore, prefer the quiet pursuit of truth in the laboratory to that of wealth in a limousine or a Ford. Intellectually, laboratory research with the possibility of making a permanent addition to knowledge which will advance scientific medicine and so benefit suffering humanity, has an appeal of the highest order, and all honour to those who are able and willing—for we are not all so gifted—to follow the call. It can hardly be too often emphasised that in the best interests of all concerned the clinician and the laboratory worker should be in constant and close touch, and, indeed, in the whole-time directors of professorial units they are combined. The laboratory worker should for his own sake have a full and experienced training in clinical medicine.

[After brief allusion to the work of the anæsthetist as a branch of therapeutics not so sharply marked off as a specialism, and to the new and particularly special work done in radiology, he continued:—]

Careers in Consulting Practice.

Consulting physicians and surgeons, though often dubbed "specialists" by the public, are not usually regarded by their professional brethren in the same category as those who practise ophthalmology, gynæcology, laryngology, otology, psychiatry, orthopædics, and other legitimate specialties. The general consulting physician and surgeon have had their wings somewhat clipped by the growth of specialism, and, indeed, hospital physicians now commonly pay more particular attention to some branch of their subject, such as diseases of the heart, lungs, nervous system, or alimentary canal. It is more especially the general consulting physician who has suffered, and the wait for monetary success may be so long that without private means the struggle is disheartening. Few consulting physicians were more successful than Sir Andrew Clark (1826–93), who said that he had to work ten years for bread, ten years for bread-and-butter, and 20 years for cakes and ale; it is not given to all to practise for 40 years, or if they do to reach the material rewards of the last stage. Money may be a mark of success, but there are other conceptions of success, and it has been written "What shall it profit a man if he gain the whole world and lose his own soul?"

With surgeons the outlook is very different, for their technical skill in operating has been enabled by the discoveries of anæsthesia and antiseptic and aseptic methods to become most successful in combating disease in all parts of the body, especially cancer and acute inflammation in the abdominal organs. But in large centres surgeons are largely concentrating their activities on some group of disease, such as the abdomen, malignant disease of the breast, surgery of the brain. Of the two great, if artificial, divisions of the healing art, pure medicine and surgery, the second is naturally the more attractive, for the benefits wrought by operation are much more obvious and spectacular than those in a physician's practice. The operating surgeon has invaded, and with good justification, realms of disease formerly regarded as sacrosanct to the physician, and the rewards are much greater; thus gynæcology in its advance has become surgical, and much of the treatment of digestive disorders is on operative lines. A budding gynæcologist should now be a Fellow of the Royal College of Surgeons. Time was when the physician was paramount, but now there are not wanting definitions of a surgeon which point to his supremacy, such as "A surgeon is a physician who can use his hands," "A surgeon is a physician and something more," and perhaps the arresting, if somewhat intriguing, autodefinition of the distinguished President of the Royal College of Surgeons, "A physician doomed to the practice of surgery." The financial rewards are much greater and begin earlier than in the physicians' earthly course, but on the other hand a surgeon's flood of activity ebbs sooner, and the wear and tear of a surgeon's exacting life are much greater than in the case of his medical brother; writing last year about this subject as illustrated by the staff of the Manchester Royal Infirmary in 1900, Mr. A. H.

Burgess pointed out that the death-rate on the surgical side was nearly five times higher than among the physicians. The future of the general surgeon is a matter for careful consideration by those who are thinking of reaping a harvest 20 years hence. The various specialties, laryngology and otology and proctology, which tend to spread from the orifices further into the alimentary canal, orthopædics, genito-urinary and venereal diseases have narrowed the former vista of the general surgeon. Further, if, as is within the bounds of imagination, discoveries such as that of Gye and Barnard lead to prevention and cure of cancer, and the immunology of the future to the prevention of inflammation of the vermiform appendix, gall-bladder, and other forms of inflammatory abdominal disease, the activities of the operating surgeon would be greatly curtailed and little more than accidents and deformities would remain.

[Sir Humphry Rolleston then pointed out that the differentiation between physicians and surgeons was artificial in principle, and closed as follows, repeating the warning against the precipitancy in the choice of any particular side of the medical career :—]

It is better to utilise a year or so at the beginning of the waiting period, when the mind is elastic and fertile in ideas, to do some work of permanent value. So often a man seizes the opportunity of gaining an assistant physiciancy or assistant surgeoncy at a hospital without a medical school and becomes a slave to seeing out-patients in an unprofitable race against the clock, when by spending the same time in experimental research he would establish a claim to a better appointment, even though he may appear to be somewhat later in the start of the race with his peers.

THE FUTURE OF WOMEN IN MEDICINE.

An Address delivered at the Opening of the Winter Session at the London (R.F.H.) School of Medicine for Women on Oct. 1st, 1926,

BY SIR WALTER FLETCHER, K.B.E., F.R.S., M.D., F.R.C.P.,

SECRETARY OF THE MEDICAL RESEARCH COUNCIL.

Dr. J. G. Adami, Vice-Chancellor of Liverpool University, whose death so lately has brought very heavy loss to a host of friends and to many good causes, was to have delivered the opening address. He would have brought some encouraging greeting and good counsel, ripened by a long life of active work in research, in teaching, and in administration, at Cambridge, at Montreal, and at Liverpool. I owe him a heavy personal debt for his constant and warm-hearted friendship. He showed this to me, then a stranger to him, when I was a freshman only a few days old at Cambridge, at a time when he was a Fellow of Jesus College, elected there after his work with Roy on the mammalian heart. Later at Montreal, as professor of pathology, later again during the war, when I worked in very close touch with him in some directions, and finally at Liverpool during his many-sided work there for the University and for education, he never failed to show me, as he showed to all, an instant sympathy and an eager impulse to help and to give rather than to take. His high technical achievements are well known and have been lately well described. His success at Liverpool in his work for the University will become increasingly recognised and measurable as the long harvest follows his sowing. But I think that if we had any right means of calculation we should probably come to know that his greatest service of all lies really in the unseen chain of events flowing from his innumerable and unrecorded acts of unselfishness and of kindness.

Our chief object, I take it, is to greet and cheer members now beginning work here and to welcome them into the common fellowship of work and study in this place. To do that is both easy and agreeable, and may I congratulate your freshmen upon entering their apprenticeship to a profession which has so much to claim and so much to offer for any who join it with the right qualities of mind and heart ?

But it is expected that our greeting should be coupled with some kind of friendly admonition or advice, and it is here I feel that the difficulty begins. I am not troubled by the general dubiety of giving advice. You will remember Lord Morley held that there were two kinds of fool in the world—those who give advice and those who take it. We can evade that condemnation by giving not direct advice but helpful information. Yet what accurate information about the coming years can we now give to inquiring beginners ? What the freshmen now seeks, surely, is information about the probable professional opportunities open to her in the early and distant future, so that she may take the best way to making the most of her powers. The difficulty of helping her is the difficulty of forecasting the future, and I think that the problems here are more pressing and more puzzling at the present time than ever in the past.

GENERAL AND SPECIAL PROBLEMS.

We are faced by two sets of problems : those which belong to all medical education, as well as those special problems which belong to women as such. The very rapid development of science in the past generation and its growing application to medical practice are making it year by year more difficult to predict the course which medical practice is likely to follow in its next progress and to direct the lines of medical education more fitly to their ends. Great changes are taking place, and the rate of change is likely to become more rapid rather than more slow. The progress of surgery, of which the development in the last generation has been so phenomenal, seems likely now to follow the law of diminishing returns and to be approaching something like stability. If science, indeed, could give us preventive control over cancer the volume of surgery would at once be immensely reduced. It is not very bold, again, to think that the physician is likely to find his powers and scope changing rapidly in many ways as we lay hold of the elements of a scientific knowledge of nutrition and begin to use its enormous latent powers. The work of preventive medicine in all its branches is in a period of great expansion, and many new forces are now at work which will open up the possibilities of extending this throughout the Empire and of removing the long-standing waste and disgrace of preventable but unprevented disease under the British flag. The growth of biochemistry holds obviously untold possibilities, some almost within our grasp, which, when applied to human affairs, may deeply affect the future of medicine and indeed may bring startling changes to the whole of our social structure. In large and in detail the problems of the kind thus briefly indicated must be in the minds of all those who are serious about medical education.

THE MEDICAL EDUCATION OF WOMEN.

All these general considerations, of course, are relevant to women's education no less than to that of men. But I would venture to urge now that there are problems of women's education in medicine which are not the same problems as those for men, and that women should resist the present assumption that their medical education should follow exactly the lines laid down for men, and that their outlook towards their future practical work should be the same. Hitherto the medical education of women has followed in almost every detail the traditions and practice evolved for men. This has been an historical necessity. The early pioneers of women's medical education had no choice. I need not in this place touch on the history of this great movement, so well known to all here. It was a movement of which some of the great leaders have their names enshrined for ever in this school. *Si monumentum requiris circumspice.*

The battle now, however, has been fought and won, and almost complete freedom has been gained for

the future development of women's medical education. The time seems to have come when close parallelism at every stage of the medical education of men and women should no longer be assumed. Better reasons, at least, must be found for it than custom and convenience, which sprang from older necessity. It may be that to maintain too close a parallelism is wasteful and even disastrous. As biologists we cannot fail to be awake to this. "Male and female created He them." We should be slow to think that the very best powers of a woman can be developed and employed by following exactly the same course and by working in just the same fields as those in which the best powers of a man may be brought out. We must believe that the highest service of each will be given in differentiation of function, and that coöperation between man and woman, each working in the best sphere, is to be far preferred over rivalry. Closer adaptation of the nature of the work to the qualities of the workers by no means involves any inequality or any lowering of intellectual standards. On the contrary, it is likely to call for higher standards on each side and to give room for effort which will be more effective because it will be more intensive.

I touch upon these problems here with the greatest diffidence. I am much more certain of their existence and importance than I am of the right way to their solution. When I speak of divergence or differentiation in the educational courses to be followed by men and by women, I am thinking, of course, of the whole period of training, and more especially of post-graduate training. How far, or at what points, or if at all, there should be a difference in the minimum courses for qualification are other problems not now considered. I am thinking rather of what a woman student should be inclined or recommended to select than of what she should be made to do by regulation.

In this matter we should think first of the fields of work specially appropriate to either sex, and without looking at all closely now to see where the exact boundaries of the fields may lie. It seems to me obvious that the rough and tumble, if I may use those words, of general practice make it much less suitable as a general rule for women than for men. It seems evident, too, that only exceptional women are likely to join with men on equal terms in specialised surgery. It will be long, to give another instance, before medical work in the tropical and many other parts of the Empire will be so suitable for women as for men.

THE SCOPE OF WOMEN IN MEDICINE.

On the other hand, there are large fields of service calling peculiarly for the special gifts of women, in which it seems to me that they could give far more abundant and more progressive service than is given now. I think here specially of the study of nutrition, of children's diseases, and of maternity in all its phases. Here are immense fields offering problems of the greatest interest, and giving opportunities for service of inestimable value both to the individual and to the nation. Closely linked with these are the possibilities of work in preventive medicine, in the study and management of child welfare, whether in the city, in the school, or in the factory, and in all the applications of physiology and medicine to the lives of women and children engaged in industrial work.

Problems of Nutrition.

I said earlier that the first beginnings of our knowledge of nutrition were already promising to affect deeply the practice of medicine. Is not this a direction in which women should strive to make themselves, so to speak, mistresses in their own house?

It happens here that much of the basic knowledge we are beginning to collect has been gained in the laboratory by medical and by non-medical women. Miss Chick and her colleagues at the Lister Institute have given invaluable service here by work, more particularly, upon the several vitamins. They gave help of the first importance to our naval and military forces during the war by their work upon the anti-scurvy vitamin C and the vitamin B. Miss Chick, again, and her colleagues, Miss M. Hume and Miss Henderson Smith, together with Dr. E. J. Dalyell and Dr. Helen Mackay, of this School, as clinicians, made valuable studies of rickets in Vienna from 1919–22, and to this expedition we owe among other things the first experimental demonstration that ultra-violet light and the vitamin of cod-liver oil are interchangeable in the prevention or cure of rickets in babies. In the past year Miss Chick, with Miss Roscoe, has shown, by refined and laborious experiments, that the growth vitamin A and the antirickets vitamin D for their abundance or deficiency in cow's milk, depend upon the diet of the cow and its access to sunlight. The growth vitamin depends simply upon the supply of vitamin in the cow's fodder. The cow can only transmit it. But the antirickets vitamin, though it may be supplied in the fodder and transmitted by the cow, may also be manufactured afresh in the cow's body under the influence of sunlight. When we think of the dependence of our industrial populations upon the milk of cows commonly stall-fed and kept in the dark, we can realise the inestimable practical value of new knowledge of this sort.

Another woman, again, and another non-medical woman, Mrs. Mellanby, in following up her husband's pioneer work upon rickets as a deficiency disease, has revealed a fundamental relation between the diet before and during dentition and the formation of teeth, the effects of vitamin deficiency being shown both in damage to their general structure and arrangement and in failure of their minute, invisible architecture—that prismatic architecture of the enamel which gives it hardness and its resistance to disease. It seems likely that this discovery will not only transform our outlook on the national problem of dental decay, but give us the true key to its practical solution.

All these studies and others like them give ground for confident hope of an immense increase in our practical powers of repelling disease and of increasing the happiness and the beauty of our people. Research here is costly, painful, and slow, yet the due application in effective practice even of the little we know already seems often to be slower still.

The new knowledge of the vitamins of milk which we owe to Miss Chick and her colleagues has immediate relevance to the problems of human lactation, to the treatment of the expectant and nursing mother, and the management of breast-feeding. This seems to be a field crying aloud for the better attention of women. If the truth were known I venture to think that my sex has done far too little in the proper advocacy of breast-feeding; men have tended, I am afraid, to throw their influence in fact, if not on paper, rather on the other and the wrong side. But even with the better knowledge and the better weapons that research has given, a man after all can only know and apply the physiology of lactation. A woman may know both its physiology and its psychology, and without a knowledge of both the physician is incomplete.

The application of nutritional study to medical practice, whether curative or preventive, surely offers a field of work peculiarly fitted for women. It is not a soft option. It calls for arduous work and highly technical study; it offers problems of great intellectual interest, and at the same time promises high rewards in practical usefulness. In spite of this, however, it does not seem that any significant body of medical women are turning their special attention in this direction.

Defects in Food-supply in Women's Institutions.

This seems in itself to be a phenomenon worth examining. I would ask you to allow me to touch here upon a point which may possibly have some relevant connexion with it. I will put a bold question and hope that you will forgive my candour. Why is it that women following a communal intellectual life are so prone to neglect both the quantity and the

quality of their own food? It is notorious that, speaking generally, women's colleges and other institutions governed by women provide food which is often inadequate in amount, badly chosen, badly cooked, and badly served. All men who have sisters or daughters at college or some similar place become aware of this. It is not enough to say that women are less greedy than men. The deficiencies I have in mind often take the diet below the minimum for due nourishment, while bad cooking is at least as wasteful and indefensible as greed itself. I venture myself to think that the phenomenon I describe, now perhaps beginning to disappear, was originally due to the intellectual fervour of the movement for women's higher education, and that in the pursuit of high thinking plain living was allowed to become bad living. Here has been a great opportunity for medical women, and I believe that enlightened action from your professional side has still immense potency for helping the nation by improving the food and the health of the very girls and women upon whom our best hopes for the national future depend.

CONCLUSION.

May I finally touch upon one consideration which must be borne in mind in all discussions of divergence between the medical courses of men and of women? The high function of marriage rarely takes a man out of the profession; it must, on the other hand, in most or many instances, remove a woman from practice. This elementary difference is inevitably a large factor in decisions that have to be made when men and women students stand together in competition for educational facilities within hospitals or elsewhere. Time and money spent upon, say, ten men will go to make nearly ten future doctors. The same effort spent upon ten women must give a far smaller future effective output. I hold myself that few, if any, schemes of education are better than a sound medical education as a preparation and equipment for marriage. It should guide and strengthen a woman to perform "justly, skilfully, and magnanimously," all the high and all the lowly tasks of married life. I think a wise student will see to it that in the absence of special reasons she will try to emphasise in her professional training and work those parts of the subject not only best fitted for a woman if she remains in professional practice, but most likely to be serviceable if and when marriage comes to her afterwards.

I know well that I have touched upon several points still the subject of high controversy. Yet it is those who are most in earnest about the future of women in medicine who will be the most desirous that these problems should be raised fearlessly, and that they should find their discussion and their right solution at a place like this, so rich already in the highest traditions of work and service.

DOCTORS AND THE PUBLIC.

An Address delivered at the Opening of the Winter Session at St. George's Hospital on Oct. 1st, 1926,

BY E. GRAHAM LITTLE, M.D., F.R.C.P., M.P.,
PHYSICIAN IN CHARGE OF SKIN DEPARTMENT, ST. MARY'S HOSPITAL.

[Dr. Graham Little commenced his address with a eulogy of the personal and teaching qualities of Dr. Howship Dickinson, under whom he worked in close contact at St. George's Hospital, made the closer because the late Lee Dickinson, Howship Dickinson's promising and only son, lived in Dr. Little's house. He went on to say that in dealing with his subject, Doctors and the Public, he intended to take as the text of his address a letter which appeared in the *Times* of Oct. 23rd, 1925, written by Mr. Bernard Shaw. He said:—]

My illustrious countryman is handicapped, but of course not deterred, by a complete ignorance of the subject he criticises, and perhaps for this very reason is more than ever typical of a great mass of public opinion which the profession will do well to recognise is dissatisfied with many of the circumstances attending the practice of medicine to-day. Mr. Bernard Shaw writes:—

> "Unregistered practitioners are at a heavy premium because they have mastered the modern technique of which registration guarantees ignorance. . . . The G.M.C. has become a trade-union of the worst type—namely, the type in which the entry to the trade and the right to remain in it are at the mercy of the union. Not only is the type the worse, but in this particular instance it is at the crude stage of preoccupation with professional earnings and sullen defiance of public opinion, which produced the Manchester and Sheffield outrages in working-class trade-unionism in the last century."

In condemning the obsolete training maintained by the G.M.C., Mr. Shaw remarks that—

> "There is nothing that the unregistered practitioners do that cannot be done by registered ones, if only they are apprenticed to the techniques of to-day instead of to those of a century ago."

The implications are: (1) that medical education of the present day is ill-designed to meet the needs of the public and compares unfavourably with the training, if that word can be used in such a connexion of some branches of unqualified practice; (2) that the medical profession is ruled by an obsolete and tyrannical code of ethics, administered by a body, the General Medical Council, which ought in the public interest to be forthwith scrapped, and that rulers and ruled are actuated by the most sordid motives of self-interest.

THE WORK OF THE GENERAL MEDICAL COUNCIL.

[Examining these criticisms in detail, Dr. Graham Little pointed out that the General Medical Council, so far from maintaining an obsolete training, has resolutely marched with the times by keeping in the forefront of medical education the preventive and clinical aspects. He said:—]

Although readjustments in teaching both anatomy and physiology may be necessary, those subjects must form the basis of all scientific medicine. Again, with the object of laying greater emphasis upon the ultimate end of medicine—namely, the prevention of disease rather than its cure—the General Medical Council has wisely placed in the very forefront of its resolutions adopted in 1922, with regard to professional education and examination the recommendation: "That throughout the whole period of study the attention of the student should be directed by his teachers to the importance of the preventive aspects of medicine." And with the same object of securing the maximum period of study for clinical subjects, these resolutions further recommend: "That a minimum period of three years shall be available for these studies." This period is much more usually four years than three. It is, in fact, in the insistence upon the importance of clinical training that the English School of Medicine has gained its great prestige. . . . . It is precisely in the preposterous neglect of clinical study and the lack of opportunities for pursuing it that the unqualified practitioners compare so very unfavourably with orthodox medical schools. To take one glaring example: The largest osteopathic college in the United States, Kirksville, Missouri, which claims 1000 students, is situated in a small frontier town, the whole population of which does not exceed 4000; one-fourth of this population may be regarded as students of this particular college. The Universities of Oxford and Cambridge, each situated in towns with about 60,000 inhabitants, have wisely regarded the clinical material afforded by such populations as being entirely inadequate for the study of clinical medicine, and their medical students are consequently sent to London for their clinical years. There is no statutory body in the United States comparable to our General Medical Council, and the lack of such an authority accounts for the success of the

bluff by which these colleges pretend to be adequate schools of medicine. Our General Medical Council would, of course, not recognise any medical school as being equipped for clinical study in which the clinical material was limited by a population of 3000 persons.

UNQUALIFIED PRACTICE.

[Dealing with the multiplicity of subjects required by the medical students of to-day, Dr. Graham Little thought that medical education must tend to be more prolonged, it being inconceivable that the time given to the study of the preliminary subjects should be curtailed, while it is impossible to prevent the later subjects becoming more numerous and complicated in sympathy with immense advances in medicine. He drew a parallel between the training of qualified men and that which unqualified persons receive, reminding his audience that in Great Britain alone the legislature encourages unqualified practice, allowing any man to exercise his skill in any branch of medicine or surgery and receive payment without legal penalty unless he should pretend to the position of a registrable qualification. He did not consider that there was any dearth of properly educated medical men in this country making unqualified practice a necessity for the public, seeing the proportion of doctors to the population is 1 to 1400. He continued :—]

The following I consider ought to regulate the attitude of the public towards the medical profession. The words are quoted from a leading article in the *Times* of March last.

> "The fatal weakness of the unqualified practitioner is not his lack of a medical degree, but his lack of that knowledge of the disease which, however imperfectly, enables a qualified man to interpret the signs presented by his patient, to distinguish one sign from another, and to relate the signs to prognosis and treatment. Diagnosis, in short, must precede therapy. To contend, then, that the public interest can possibly be served by exempting anyone who is to enjoy the status of a registered medical practitioner from training in those sciences by means of which alone a diagnosis of disease can be made is, on the face of it, ridiculous. There can be no 'back-door' to the Medical Register. Nor can the public suffer for a moment any delegation by doctors of their right to determine the nature of a patient's complaint. Once, however, this crucial matter has been settled and a line of treatment laid down the doctor may delegate, under a general medical guidance, the responsibility of treatment to skilled persons, who do not possess a medical diploma."

The *Times* properly stresses the danger of allowing unqualified and ill-trained persons to undertake the diagnosis of disease. There is another factor than mere ignorance which adds very considerably to this danger and which has not been noticed. At the present day it is more than ever necessary in any case of unusual difficulty that the patient should be examined by several experts, for no one can combine the knowledge which all but the simplest cases require for their elucidation. The unqualified practitioner is by the nature of things debarred from seeking any help whatever. He is afraid to betray his ignorance, or he is met with the real difficulty that reputable persons, quite properly, will not consult with quacks. The result often is that the unqualified practitioner is as isolated in his practice as Robinson Crusoe, and this consideration alone should enlighten the public upon the very real risk of relying upon such isolated and inadequate experience. Notwithstanding these very obvious handicaps to unqualified practice the human impulse to believe the printed word leads vast numbers of the public to swallow both medicine and theories with an equally absurdly misplaced confidence, and the British Isles still enjoy a bad pre-eminence in the consumption of patent medicines as against all other countries, with the possible exception of the United States. Nowhere, indeed, have the quacks more friends than in the present House of Commons, if one may judge by the personal experience I had when bringing in my motion, in February last, for an inquiry into the whole question of unqualified practice, with the object of regulating it. In the very interesting debate which ensued it was amusing to find that speech after speech expounded the thesis that advances in medicine had come invariably from extra professional sources.

The public are, in fact, unaware of the immense strides made in our science and art during the last 30 years, so eloquently described by Prof. Starling.

> "When I compare," he writes in his Harveian Oration, "our present knowledge of the workings of the body, and our powers of interfering with and of controlling those workings for the benefit of humanity, with ignorance and despairing impotence of my student days, I feel that I have had the good fortune to see the sun rise on a darkened world, and that the life of my contemporaries has coincided, not with renaissance, but with a new birth of man's powers over his environment and his destinies unparalleled in the whole history of mankind."

The medical discoveries in that period have been far more often made by medical than by non-medical men. The great name of Pasteur is the stick most often used to beat the medical dog, who is accused of having been blind to the significance to medicine of Pasteur's discovery of the causes of putrefaction. But it was Lister, a medical man, who saw its full meaning for surgery, and without Lister Pasteur might very well have passed unheeded by medicine.

INDIRECT ADVERTISING AND COVERING.

[Dr. Graham Little, dealing with the subject of communications to the lay press signed by medical men, thought that the potent influence of the press should be used to disseminate sound expert information which would be useful to uninstructed persons. He was critical of the work of the New Health Society, and in reference to the disciplinary actions of the General Medical Council he said :—]

There can surely be little question that the profession of medicine has advanced in usefulness and in reputation pari passu with the setting up of the General Medical Council. The vast majority of the profession cheerfully accept the ruling of the Council upon methods of professional education and discipline. That the Council in its educational policy follows closely the progress of science is surely very evident from the frequent additions and modification of the curriculum which it initiates; indeed, it is perhaps too ready to accept as gold what is sometimes pinchbeck, and I have hinted at the enormous burden which the addition of fresh subjects throws upon the present student. In its prime duty, that of supervision of medical education, objections to the Council that it lags behind modern advances in science can hardly be sustained. In the matter of discipline I submit that the profession, and not the public, is the best judge as to what degree of control medical men would or should accept—that the control is useful to the public can again hardly be disputed. In the matter of advertisement the Stock Exchange enacts a self-denying ordinance against its members advertising, an ordinance which is clearly of public utility. Medical men should surely enjoy the same privilege of ordering their affairs in this respect as they will. Open advertisement would probably be resented as much by the public as it would be disliked by reputable medical men. In the matter of covert advertisement it is more difficult to differentiate what is legitimate from what is undesirable, but no doubt a via media can be found.

The activities of the Council in restraining the association of registered practitioners with unqualified persons are also greatly misunderstood by the public. It should be emphasised that the offence known as "covering"—that is, the protection which an unqualified man receives from his association with a registered practitioner—may be actually dangerous to the public, and it is from this standpoint that the

Council has framed its professional rule against such "covering." The registered man who breaks this rule does so with full knowledge of the consequences which it entails. Indeed, the consequences are quite frequently desired, inasmuch as a registered man has very much more liberty of action after his removal from the Register, and he is in no way debarred from continuing his practice. He may advertise to his heart's content, and he commonly reaps an enormous advertisement by the mere removal of his name. The unfortunate phrase foisted upon the Council by the wording of an Act of Parliament, "infamous conduct in a professional respect," often creates an unmerited sympathy with the removed person, whose conduct does not appear in the least infamous to the public conscience, by which it is often regarded as a mere breach of professional rule. But if it be kept in mind that this removal means very little more than the omission of the removed person's name from a list of practitioners who prefer to be bound by rules which the removed person wishes to break and does break, much of this misplaced sympathy would be eliminated. It is again to be emphasised that the penal activities of the G.M.C. form only a very small part of its functions.

MEDICINE IN PARLIAMENT.

The comparison which Mr. Shaw makes of the G.M.C. with trades-unions plainly springs from the confusion in his mind between the General Medical Council and the British Medical Association. The latter is a private body which has as much right to make rules for its members as has the committee of a club, and those who do not like to obey those rules have the easy alternative of resigning membership. But the complete inability of the G.M.C. to initiate any disciplinary action is a source of weakness which clearly puzzles the public mind; few laymen understand that unless a change is made in proper legal form by some person or body of persons prepared to take the considerable risk of bringing what amounts to a legal action against the errant practitioner, the Council is powerless to intervene; it acts only as judge, never as prosecutor. In the interest of the public it would seem desirable that some machinery should be provided, such as the institution of a public prosecutor, whose duty it would be to bring the offender to book, and who would be protected from personal loss in the discharge of this duty.

The hostility to the medical profession prevalent in the House of Commons was evidenced by the debate upon my motion dealing with "unqualified practice." It is inconceivable that a similar motion defending practitioners of law from the competition of unqualified practitioners would have met with the same hostility, and of course no practice by unqualified persons pretending to be lawyers is allowed. The reason for this difference of feeling is not far to seek. There are no more than 14 doctors in the present House of Commons; there are something like 200 lawyers. It is difficult to say why doctors should be so poorly represented, and especially doctors in active practice. I believe I may claim to be the only medical man in the House of Commons at present in full and active practice. It should be no more impossible for doctors in practice to be Members of Parliament than it is for lawyers in practice. A man out of practice very soon loses touch with the profession, or, at any rate, ceases to be as representative of medical interests, as the man who is constantly in contact with his fellows. And so I would plead for a more general coöperation on the part of my profession in political problems of to-day, which must, and do, so vitally affect the profession. A certain monetary sacrifice is entailed, more especially because the profession seem to think that when a man goes into Parliament he cannot remain a doctor, and for a consulting physician this may mean serious loss of practice. . . . Action in the House of Commons is far more effective than in any other place, and authoritative information in that assembly, contributed by men engaged in medical work, has never been greater than it is at present.

"EX NIHILO NIHIL FIT."

Abstract of an Address to Students at the Middlesex Hospital on Oct. 1st, 1926,

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THE life-history of a successful man, no matter how great, consists of a prolonged, strenuous struggle. Throughout nature every animal is constantly forced to fight for its existence and search diligently for food, and work may be looked on as the price paid for life. For the successful study of medicine work is essential, and the logical conclusion is that to serve up knowledge to a student in a predigested state must paralyse his effort; mental dyspepsia must be the result. Teaching—or rather cramming—in which the facts of subject are presented to the student without any explanation how the knowledge has been gained only attracts those devoid of ambition, whose only desire is to qualify and make a living. The process is fatal to the evolution of intellectual faculties, and teachers guilty of it are sinning against posterity. The easier it is to get anything the less the desire exists for its attainment, and to make the acquirement of knowledge easy is, perhaps, the best way to increase ignorance. Free education is not the boon it is supposed to be, and compulsory education is impossible and worse than useless. The individual being taught must be an active and willing agent, and all medical study, therefore, should be active, not passive. Most small lectures should be relegated to the dust-heap, though occasional lectures should be given as a stimulus by a master in the subject. A student should attend the courses prescribed regularly and try to gain a clear knowledge of the subject in hand; he comes to a medical school to become an efficiently trained medical man, not to pass examinations.

Work must be purposive and regular if definite results are to be gained. It is foolish to become exhausted by memorising a book so that when an examiner touches the button the record may be produced with painful accuracy. This kind of work is slavery. As a contrast, for instance, there is the student who carefully models freehand the parts of his dissection, building them up to form a solid representation. After an hour's work he deliberately destroys his model, puts the original away, and again attempts to model in freehand. A few days later he tries to model the same part without the original in front of him. He is slowly developing a solid, concrete, stereoscopic X ray image of the human body, which in time will become permanent, and, like his shadow, accompany him everywhere. In the wards and later in his consulting-room it is beside him, at once becoming visible at his command. Diagnosis becomes a simple matter, for thoroughness of work has led to the result aimed at—a full appreciation of the structure and working of healthy and diseased bodies.

It would appear, from which is often said, that when the student reaches his final years of study he is devoid of all or most of the knowledge he has gained in previous years; but obviously he must have learnt something. The truth seems to be that the young fledgeling from a medical school has some knowledge of every subject, but it is not coördinated. He has not been taught in each succeeding stage of his education to make use of the knowledge already gained in the school. Although, of course, any problem in any subject is useful as a mental exercise, and, if overcome, develops the logical faculties and scientific sense, there are problems in medicine so diverse and numerous that it is quite unnecessary and unwise for a student to wander into other fields of knowledge to exercise these faculties. His time is better taken up in coördinating his medical knowledge. The best way to get coördination in knowledge is to prolong the early education into the succeeding

years and to begin the hospital work almost as soon as the student enters the school. Each stage in the education of a medical student should interlock or dovetail with the previous and succeeding stages.

Knowledge should be based on great general principles and students should learn to reason from principles to the special study in hand. A student should not make the mistake of reasoning from the special to the general. He should refrain from depending on his memory. The medical man is a thinking animal, and the practice of medicine depends upon the application of great general principles based upon observation, experience, and research. The sooner a student is set free from his teachers so as to allow experience to be his sole teacher the better for the growth of his real knowledge. Unfortunately, for evident reasons, it is extremely difficult, or almost impossible, to let a student have a direct experience in the treatment of diseases previous to qualification, and it is evident, therefore, that study and work are essential after medical birth and should continue throughout life.

Lack of coördination in the various stages of the student's training is in part due to the fact that the subjects are taught by men who have little experience of the work of later years. This refers to every stage of the student's career, not excepting the final year, for how many clinical teachers in hospitals have any experience of general practice? How many of them are acquainted with the early phenomena of disease by first-hand experience? But are the clinicians not training men to perform duties as general practitioners?—duties of which many are more or less ignorant. Would it be too much to demand that every teacher in a medical school should start life as a general practitioner? Should a general practitioner, an ordinary doctor, not be a member of the staff of every teaching hospital?

Should ordinary catarrhal conditions in children be passed by as of little account whilst rare and incurable diseases, such as acromegaly, are carefully and minutely studied? Is it not better for the future of national health that a student should be thoroughly taught how to recognise and treat a suppurating finger or a common cold, or should a prospective medical man have no knowledge of these mild ailments? Should much of his time be taken up watching from a distance obscure and difficult operations which can only be undertaken by highly trained specialists?

Surely the medical student ought to work for a sound knowledge of the very earliest signs of the disease in addition to studying the pronounced cases which are so common in all hospitals. No attempt should be made at specialism until after graduation. To become a specialist appears to be easy, but gaining the experience and knowledge necessary to be a great doctor is only possible to a few men.

Patients wisely avoid the young doctor, for they do not want to be experimented on. He has thus little chance of studying disease in private. He may deplore that he has chosen so precarious a means of earning a livelihood. He has his chance now, if he will only take it. Let him become a keen student of disease. He should practically live in the hospitals, for he cannot afford to wait for cases at home. Let him realise that he is far from being an expert; let him set about gaining experience. A medical man's first and principal interest should be his profession. Every moment of time can be occupied during this stage in studying cases, working for higher examinations, and becoming expert in the technique of medicine, surgery, and midwifery.

A young practitioner should look forward to a hard life with little remuneration. He will steadily but slowly improve in efficiency and he may add a little to medical knowledge. The practical doctor has greater opportunities to carry on investigations bearing directly on the treatment of disease than the laboratory worker. Prolonged, persistent work gives results, and large unexplored fields are open to all; if the harvest is to be made there must be no strikers, no idlers, no dole-receivers in the profession. Work must be constant. A man simply out to make a living in medicine had better change his occupation and make room for a worker.

It must be clear to anyone with experience that to obtain anything a struggle is necessary, that resistance must be overcome, that work must be done. In other words, it is true that "Ex nihilo nihil fit"—that out of nothing comes nothing.

THE ROUS SARCOMA No. 1.

AN EXPERIMENTAL STUDY.

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IT has recently been claimed by Gye[1] that the infectivity of the cell-free filtrate of the Rous chicken sarcoma is due to the presence of two factors: firstly, an ultra-microscopic particulate body capable of cultivation, and therefore presumably organismal—the "virus"; and, secondly, a labile substance, possibly chemical in nature, believed to be derived from the tissues of the host. These two substances, although individually inert, are capable in combination of inducing Rous tumour formation.

Gye has further claimed that a principle apparently identical with the supposed "virus" is present in certain mammalian tumours and that it can replace that of the Rous tumour, or, in other words, can activate the Rous chemical factor.

The chemical factor, on the other hand, is probably different for each type of tumour and for every species of animal, and it is this fraction, the "specific" factor, which determines the nature and site of tumour formation.

The procedure adopted by Gye for the isolation of these two factors is the following:—

A piece of fresh Rous tumour tissue is dropped into a special serum broth culture medium and incubated for 24 hours. The fluid from such a culture is active, and if injected into a suitable chicken it will produce a Rous tumour. To a culture such as this the name "primary culture" has been given. If incubation is carried on for three days or longer the culture becomes inactive, and when injected into a chicken no tumour results. This inactivity is believed to be due to destruction of the specific or chemical factor by prolonged incubation.

If, however, some fresh active fluid, obtained by grinding up a piece of Rous tissue with Ringer's solution and filtering off the gross particles, is treated by the addition of a few drops of chloroform and by incubation for three hours, it is also rendered inactive, due in this case, it is thought, to destruction of the virus.

Although these two fluids are individually inert, when they are mixed together in equal portions and injected into chickens, tumours appear which in every way resemble the Rous sarcoma No. 1.

Cultures similarly prepared from certain mammalian tumours—viz., mouse carcinoma 63, Jensen rat sarcoma, and rat carcinoma 9, are also used to activate Rous chloroformed filtrate. Gye has also been able to "subculture" the "virus" in a serum broth medium to which chick embryo has been added, the fluid even of an eighth subculture being able to activate chloroformed filtrate.

Almost immediately following the publication of Gye's paper suggestions were put forward by Twort[2] and others that it might be possible to activate Rous chloroformed filtrate (i.e., chemical or specific factor) by agents obtained from non-neoplastic tissues, and such substances as embryo tissue and autolysed tissue have been suggested.

In the investigations described below we have endeavoured, in the first place, to repeat Gye's

experiments in confirmation of the presence of two essential factors in the production of a Rous chicken sarcoma. In the second place we have attempted to determine whether one of these factors, the "virus," can be replaced by agents derived from other malignant growths and from benign tissues. Thirdly, we have attempted the artificial cultivation of the "virus."

Practical and Technical Notes.

In order to avoid unnecessary repetition we shall detail here certain materials and methods used by us throughout this work.

Culture Media.—Hartley's broth, as modified by Gye, was used throughout. Serum was obtained from rabbits by cardiac puncture and added shortly before use. We were rarely troubled with sepsis in the media.

Anaerobiosis.—The McIntosh and Fildes jar was used to secure strict anaerobic conditions and gave very satisfactory results. Air was removed by a Geryk pump, and the degree of anaerobiosis was checked by means of a methylene-blue indicator.

Filtration.—Chamberland filter candles L_1 and L_2 were used in various experiments. L_1 passes many small organisms easily. L_2 is of finer mesh and prevents the passage of *B. prodigiosus*. Suction by means of a small water-pump was used in connexion with these filters. All candles were carefully examined before being used.

Sand-and-paper pulp filters were made up and used as described in detail by Gye and Andrews.[3] "Sand filtrate," obtained by passing a Rous tumour emulsion through such a filter, is a clear, slightly yellow fluid capable of tumour production when injected in very small doses.

Chickens.—Only Barred Plymouth Rock chickens were used. Generally they were about one month old. All the chickens used in any one experiment were of about the same age and size.

Removal of Tumour.—The birds were killed by coal-gas, plucked, and then placed in a solution of weak lysol for five minutes. After this the skin was incised and reflected by means of a cautery. It was then an easy matter to remove the tumour aseptically, and except in our very earliest experiments we were never troubled by sepsis to any extent.

Concealed Contamination.—To begin with, we made a practice of putting up cultures in broth and on agar from all our primary tumour cultures for both aerobic and anaerobic incubation, but we soon found that this was unnecessary and that it was generally quite an easy matter to identify a contaminated culture after the long incubation necessary in these experiments. If the contamination was so well concealed that it did not appear during incubation for three to 12 days, its presence seemed to us to be of little importance. We may add that in some of our earliest experiments, when sepsis was present, it did not appear in any way to interfere with the activity of the "Rous agent."

Silica.—Following the practice of Rous and of Gye we have added a trace of silica to all our fluid injections.

EXPERIMENTS TO CONFIRM THAT TWO FACTORS EXIST IN INFECTIVE FLUID.

It was necessary first to attempt to ascertain if Rous infective fluid contained two factors, individually inert but active when in combination. The most important evidence put forward by Gye in this connexion is illustrated by his experiment dated Jan. 14th, 1924. In this experiment he shows that by adding a Rous "primary culture" rendered inert by prolonged incubation to a filtrate inactivated by chloroform a potent mixture is obtained which produces typical sarcomata when injected into chickens.

We have performed a considerable number of experiments in an attempt to confirm this fundamental finding, altogether over 120 fowls being thus inoculated. Three experiments are described in detail below. They have been selected because they represent the various types of results that we have obtained. For convenience they have been renumbered 1, 2, 3.

Expt. 1.—A fragment of Rous tumour about the size of a split pea was incubated aerobically in rabbit serum K.Cl. broth in an Erlenmeyer flask for four days. At the end of this period the supernatant fluid was filtered through an L_2 Chamberland candle. Fresh active fluid was obtained by grinding up a piece of Rous tumour and diluting it with Ringer's solution. This fluid was filtered through sand-and-paper pulp, and lastly through an L_2 candle. Part of this L_2 filtrate was used in the fresh untreated condition, the remainder being subjected to chloroform as described by Gye. Chickens were then inoculated as indicated in Table I. which also shows the appearance and relative size of the resulting tumours.

This experiment confirms in every way the results obtained by Gye. It will be seen that a four-day primary culture of Rous tumour was inactive, as was also a fresh chloroformed filtrate, and that the two, when combined, were very active and produced Rous tumours which killed in 21 and 23 days. It is of interest

TABLE I.

Chick.	Inoculum.	Day. 7	18	23	26	32	40	50
74	4-day culture 1 c.cm.	–	–	–	–	–	–	–
75	Chlor. filtrate 1 c.cm.	–	–	–	–	–	–	–
76	Culture plus chlor. filtrate 0·5 c.cm. each.	–	–	+ (*a*)				
77	Do.	–	+ + + (*b*)					
78	Untreated L_2 filtrate 1 c.cm.	–	–	–	+	+ + + (*c*)		

(*a*) Died 23rd day. (*b*) Died 21st day. (*c*) Died 37th day.

to note that the tumours produced by this mixture appeared earlier and grew more rapidly than that produced by a plain untreated L_2 filtrate—possibly an indication of variation in the resistance of individual birds to tumour growth, a factor which we believe to be very important and to be the cause of much difficulty in the interpretation of experiments of this nature.

Expt. 2.—Fragments of Rous tumour were incubated aerobically in R.S.K.Cl. broth for seven days, at the end of which time the supernatant fluid was filtered through an L_1 candle. "Sand filtrate" of fresh tumour was obtained and subjected to chloroform. Chickens were then inoculated as shown in Table II.

TABLE II.

Chick.	Inoculum.	Day. 8	15	20	26	38	45	60
114	7-day culture 1 c.cm.	–	–	† (*a*)				
115	Do.	–	†	+	+ + (*b*)			
116	Chlor. filtrate 1 c.cm.	–	–	–	–	–	–	–
117	Do.	–	–	–	–	–	–	–
118	Culture plus filtrate 0·5 c.cm. each	–	+ + (*c*)					
119	Do.	–	+ + (*c*)					

(*a*) Died 25th day; small tumour. (*b*) Died 26th day; large tumour. (*c*) Both died 19th day; large tumours.

Unfortunately all our experiments did not work out as satisfactorily as Expt. 1. The chief difficulty which we encountered was the persistent activity of the primary cultures. To obviate this we extended the period of incubation to five, six, or seven days, and even then the cultures remained active when injected by themselves. This is well illustrated in Expt. 2 (Table II.). Chicks 114 and 115 both received an injection of 1 c.cm. of a seven-day culture and developed tumours which appeared on the 20th and 15th days respectively. Even here, however, there is evidence of the presence of two factors. It has been shown that with Rous tumour filtrates the size and rapidity of growth of the tumour bears a somewhat direct proportion to the amount of active fluid injected. Chicks 118 and 119 received half the dose of active culture as compared with the control birds Nos. 114 and 115, yet they developed tumours which appeared earlier and grew more rapidly. The proof of the presence of two factors in this experiment is less obvious than in Expt. 1, owing to the persistent activity of the cultures as seen in chicks 114 and 115.

Expt. 3.—Fragments of Rous tumour were incubated aerobically in R.S.K.Cl. broth for 12 days. No contamination occurred. At the end of this time the supernatant fluid was passed through an L_1 filter. Active 24-hour primary culture of Rous tumour was filtered through an

L_1 candle and then subjected to chloroform. Chickens were inoculated as shown in Table III.

TABLE III.

Chick.	Inoculum.	Day. 8	12	19	25	51
195	24-hour culture chlor. 1 c.cm.	–	–	–	–	–
196	Do.	–	–	–	–	–
197	12-day culture 1 c.cm.	–	–	–	–	–
198	Do.	–	–	–	–	–
201	Chlor. culture plus 12-day culture 0·5 c.cm. each.	–	–	–	–	–
202	Do.	–	?	+ +	+ + + (*a*)	
205	Chlor. culture plus M.63 culture 0·5 c.cm. each.	–	–	(?)	+ (*b*)	
206	Do.	–	–	+	+ + + (*c*)	

(*a*) Died 27th day. (*b*) Died 30th day. (*c*) Died 26th day.

To overcome the difficulty illustrated in Table II. we have used increasingly long periods of incubation to obtain an inactive primary culture. The result obtained with a 12-day culture amply justifies this procedure. It will be noted that in this case the "specific factor" was obtained by chloroforming an active 24-hour culture filtered through an L_1 candle in place of the usual sand filtrate, largely a matter of convenience, as any active cell-free fluid, however obtained, should serve.

This experiment, which completely bears out Gye's hypothesis, is described in full to illustrate (1) that even after 12 days' incubation the "virus" would appear to be present unimpaired, and (2) that any technical difficulty found in the making and use of "sand-filters" may be avoided by employing an active 24-hour culture as a source of "specific factor." Chick 201 did not develop a tumour, while chick 202, which received a similar injection, died on the 27th day with a large growth in the pectoral region. This difference we believe to be due to a variation in the resistance of particular birds to tumour growth. Chicks 205 and 206 are referred to later.

Discussion.

Our chief pitfall in performing these experiments has been the prolonged activity of primary cultures, which appears to have been increasing during the past few months and to be related to a gradually increasing virulence of the tumour strain. Thus in our earlier experiments, as illustrated in Table I., three- and four-day cultures sometimes proved inert, whereas now even a seven-day culture may be active by itself (Table II.). Correspondingly, tumour transplants have exhibited an increasing tendency to widespread metastasis-formation and to early destruction of the host. This is to be compared with the experience of Gye and Andrews,[3] whose tumour strain passed into the opposite phase.

On the other hand, the chloroformed filtrate has, in our experience, been almost invariably inactive, only one chick out of a considerable number which received 1, 2, or even 4 c.cm. of the chloroformed filtrate developing a tumour, which appeared as a small nodule two months after the injection. This differs greatly from the results obtained by Harkins, Schamberg, and Kolmer,[4] and it would seem possible that they are right in attributing their faulty inactivation to the particular grade of chloroform used. Throughout our experiments Messrs. Macfarlan and Co.'s chloroform (acetone prepared) has been employed. It is stored in the laboratory exposed to light and therefore probably contains toxic decomposition products which may be responsible for the inactivation previously attributed to the chloroform itself. It is interesting to compare the results of these workers with those of Murphy,[5] who has at no time had difficulty in rendering a filtrate inactive by chloroform.

Our general conclusion from this series of investigations is, therefore, that it lends considerable support to the belief that the Rous tumour arises from the conjunction of two factors. One of these may survive incubation in serum broth for 12 days, but is readily destroyed by chloroform; the other survives exposure to chloroform, but is rendered inert by prolonged incubation.

ACTIVATION OF ROUS CHEMICAL FACTOR BY AN AGENT OBTAINED FROM MAMMALIAN TUMOURS.

Gye has also been able to activate the Rous "specific factor" by agents derived from certain mammalian tumours—a mouse carcinoma, two rat tumours, and a human adenocarcinoma of the breast—and from these observations he draws the general inference that the "virus" is common, at any rate, to many malignant neoplasms.

An attempt was made to repeat these experiments, making use of two mouse tumours, M.63 and 37/S of the Imperial Cancer Research Fund, as our source of "virus." We attempted to follow as closely as possible the method employed by Gye, namely:—

The mammalian tumour was removed aseptically and a fragment was dropped into some Hartley's serum broth and incubated anaerobically for three days. The fluid from the culture was then removed and mixed with an equal amount of chloroformed filtrate of a Rous tumour emulsion. The mixture was injected into Plymouth Rock chickens. Control injections of the chloroformed filtrate alone were always made.

Working with mouse sarcoma 37 we were never successful in activating Rous chloroformed filtrate by the addition of cultures of this tumour. With M.63 we had at first only negative results, but just recently we succeeded in activating a chloroformed Rous culture by the addition of a three-day anaerobic culture of this mouse carcinoma. This is illustrated in Table III., chicks 205 and 206. These are the only two positive results out of 27 chicks thus inoculated. We ascertained later that Gye has never succeeded in activating the chloroformed filtrate by the addition of a culture of 37/S, although he has had frequent successes with M.63.

Murphy claims to have substituted an agent obtained from another chicken tumour and to have succeeded in activating the inert chloroformed filtrate by this means, and thus in part to have confirmed some of Gye's work, although his interpretation of the result is different.

CULTIVATION OF THE VIRUS.

It has been shown by Gye that when a loopful of fluid from an active primary culture of Rous tumour is transferred to a fresh tube of serum broth medium containing a piece of chick embryo the fluid in this "subculture" becomes potent and is able to activate chloroformed filtrate. This is taken by him to indicate life of the virus, more especially since he has been able to carry on this process of subculturing as many as eight times, the eighth subculture being as potent as the first primary culture in its power to activate chloroformed filtrate.

Chicken embryos of from 8 to 16 days' incubation have been used. They are taken aseptically from the shell immediately after its removal from the incubator and placed in R.S.K.Cl. broth in a McIntosh and Fildes jar. To each culture-tube containing embryo serum broth a loopful of an active "primary culture" was added. This "subculture" was then incubated for three to four days. Equal parts of the fluid from this subculture and of inert chloroformed filtrate were then mixed and injected into chickens in doses of 1 c.cm.

We were never successful in activating inert chloroformed filtrate by the addition of subcultures of virus (Table IV.).

ACTIVATION OF ROUS CHEMICAL FACTOR BY AGENTS OF NON-MALIGNANT ORIGIN.

The fact that the medium for a successful subculture must contain chicken embryo has suggested to many the possibility that embryonic tissues themselves may have the power of activation of Rous chemical factor, and thus it is suggested that Gye is in reality dealing

with a growth factor which is not necessarily confined to malignant neoplasms.

The influence of embryonic tissue extracts in promoting the growth of cells in vitro is well established. Somewhat similar factors are said to be found in tissues undergoing autolysis, and it was therefore thought possible that these substances might be capable of activating the Rous chemical factor.

The question of the activation of Rous chemical factor by embryonic tissues has been studied by Gye,[7] who reports that he has tried to replace the "virus" by chicken embryo cultures on 150 occasions without success. This is especially interesting because Murphy [5] has recently shown that he is able to activate the chemical factor by the addition of cultures of chick embryo, rat placenta, and mouse placenta. The discrepancy in the results of these two well-known workers has suggested to Chambers [8] that there is probably some small difference in the technique employed. In her opinion the activating factor may be a product of autolysis, probably chemical in nature, and she further states that such substances have been found in cultures grown under the conditions described by Gye.

In order to test this assumption various products of autolysis were added to Rous treated filtrate. In similar experiments anaerobic cultures of chick embryo, mouse embryo, and mouse placenta have been used. The chief experimental details are as under:—

Chicken embryos were obtained as before and cultured anaerobically for three to four days in serum K.Cl. broth.

Mouse embryo and mouse placenta of varying periods of gestation have been cultured in the same way.

To obtain "growth-promoting" factors under conditions which will exclude the possibility of organismal growth, fragments of Rous tumour and of M.63 tumour have been autolysed at 37° C. in Ringer's solution, to which toluene has been added in the manner described by Chambers and Scott.[9]

Fluids obtained from these different sources have been mixed with chloroformed Rous filtrate and injected into chickens. The total number of these experiments is given in Table IV. On many of the occasions on which non-malignant agents were inoculated experiments similar to our Experiments 1, 2, and 3 were performed, using portions of the same chloroformed filtrate, the activity of which was thus observed.

TABLE IV.

Inoculum (dose 1 c.cm.).	Total No. of chicks inoculated.
Chloroformed filtrate plus "subculture" of "virus"	17
Chlor. filtrate plus chick embryo culture	19
" " mouse embryo "	9
" " mouse placenta culture	11
" " Rous autolytic fluid	7
" " M.63 " "	5

(No tumours resulted in any of the above experiments.)

It will be seen that in all cases in which we attempted the activation of the treated filtrate by the addition of subcultures of "virus," cultures of embryo tissue and of autolysed tissue, we have up till the present obtained only negative results.

MAMMALIAN TUMOURS.

Included in Gye's original paper there is a short but important section dealing exclusively with mammalian tumours and in particular with mouse sarcoma 37.

Many attempts have been made in the past to transmit mammalian tumours by a cell-free filtrate and thus to bring them into line with the Rous tumour. Discussing this matter with regard to 37/S, Gye says that it may be taken for granted that this is not a filter-passing tumour in the same way that the Rous tumour is. He has found, however, that if a piece of this tumour is incubated anaerobically in serum K.Cl. broth for 24 hours, the supernatant fluid, removed and filtered through an L_1 candle, when injected into mice, will produce tumours in a large percentage of cases in about 14 days. These tumours are believed to arise from the cells of the host, which, owing to the action of the injected virus, have become malignant. Gye adds, in further proof that the fluid is cell-free, that tumour cells undergo a fairly rapid necrosis when incubated under anaerobic conditions, and quotes an experiment in which incubation for even 18 hours in Ringer's solution was sufficient to kill off all the tumour cells.

In our earliest experiments we adopted the method described by Gye, using a 24-hour anaerobic culture of 37/S. We injected altogether about 80 mice from a large number of different cultures, but we never succeeded in obtaining a single positive result. Later we modified our technique, and instead of using a plain 24-hour culture we made use of a mixture of equal parts of a three-day culture, presumably rich in virus, and a 24-hour culture relatively rich in chemical factor. We also tried a mixture of a three-day anaerobic culture of mouse carcinoma 63- and 24-hour culture of 37/S. In all these modifications, as in the original experiment, we were unsuccessful and no tumours resulted.

While performing these experiments we also tested the power of survival of tumour cells when incubated anaerobically in serum broth, and we found that in the case of tumour 37/S the cells survived as long as three days, and when transplanted into mice produced tumours in the usual way. Carcinoma 63, however, only survived about 24 hours. This result is very similar to that obtained by Okamoto [10] working with certain other mammalian tumours, and indicates the importance of adequate filtration of the cultures.

SUMMARY.

Some of the experiments described by Gye in relation to the Rous chicken sarcoma and other neoplasms have been repeated. The behaviour of certain non-malignant tissues under similar experimental conditions has also been observed. The following conclusions have been reached:—

1. Experimental results are recorded which largely tend to confirm the presence in Rous sarcoma fluid of two causal factors which, individually inert, in combination give rise to tumour growth. One of these factors, the "virus," will survive prolonged incubation, but readily succumbs to exposure to chloroform. The other, the "specific factor," is little affected by chloroform, but is rendered inert after a period of incubation depending upon the activity of the particular strain of tumour used.

2. The "virus" of the Rous tumour has been replaced, in a small proportion of experiments, by an agent derived from a mammalian tumour (mouse carcinoma 63).

3. We have been unable to replace the "virus" by agents derived from mouse sarcoma 37, certain embryonic or placental tissues, or by "growth-promoting factors" in autolytic fluids.

4. We have been unable to "subculture" the "virus."

5. Our experiments throw little light upon the nature of the two factors involved. The terms "virus" and "specific factor" are used for convenience only.

6. We have been unable to transmit mouse sarcoma 37 by injections of a cell-free culture fluid.

7. Incidentally it has been shown that the malignant cells of 37/S may remain alive under strictly anaerobic conditions for as long as three days.

8. Variation in the susceptibility of individual animals to tumour growth constitutes a factor which must be taken into consideration in the interpretation of experiments of this nature.

This work must only be considered as a preliminary to a further and more extensive study of the Rous tumour and its relationship to tissues simple and malignant.

In conclusion, we should like to thank all those who have so kindly helped us in the carrying out of this work. Especially we would gratefully acknowledge our indebtedness to Prof. D. P. D. Wilkie for the great personal interest which he has taken in this research and for the facilities for work which he has so unreservedly placed at our disposal in the newly-equipped department of experimental surgery. We

are indebted to Prof. J. Lorrain Smith, F.R.S., and Prof. T. J. Mackie for the help and encouragement which they have given us. Our thanks are also due to Dr. W. E. Gye, who has personally demonstrated to us the more important points of his technique, and supplied us with a strain of the Rous tumour, and to Dr. Thomas Lumsden, of the Lister Institute, who first instructed us in the management of transplantable tumours.

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SOME POINTS IN THE SURGICAL MANAGEMENT OF SEMINAL VESICULITIS.*

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IT is probable that no part of the urogenital system in the male is so neglected as the seminal vesicles, and yet they are implicated much more frequently than is generally supposed. Their natural defence is very poor; they are tortuous cul-de-sacs with blind diverticula lined by columnar epithelium, the whole arrangement lending itself ideally to the harbouring of infection. Moreover, the only route of natural drainage is via the ejaculatory ducts, which open into the deep urethra, itself a frequently infected cavity with none too effective drainage.

Classification.

The classification of seminal vesiculitis is at best empirical. Four clinical types may be recognised: (1) Infected, (2) hæmatogenous, (3) obstructive, (4) traumatic.

1. *Infected Vesiculitis.*—This group includes such cases as those occurring in a spreading gonorrhœa, the local spread, either direct or indirect, of a *B. coli* or pyogenic infection of the urinary tract. Infections such as bilharzia and actinomycosis are also included in this group.

2. *Hæmatogenous Vesiculitis.*—Many types of infection, such as syphilitic or tuberculous, reach the vesicle via the blood stream, as do also infections from obvious septic foci in teeth, tonsils, or alimentary tract.

3. *Obstructive Vesiculitis.*—In this group are included cases where the poor drainage of the vesicle is further interfered with by such mechanical factors as changes in the prostate consequent on adenomatous or carcinomatous conditions. The ejaculatory duct is either pressed on or deviated, and the vesicular secretions dammed back, resulting in an irritative inflammatory condition of the vesicle. Infection may be superimposed.

Masturbation is responsible for a form of vesiculitis which may be included in this group. The habit produces a condition of complete atonicity of the vesicle accompanied by a local congestion of the prostate, which increases the difficulty of the vesicular discharge in finding its way out, and the atonic vesicles are entirely unable to surmount it. Congenital anomalies may also give rise to a vesiculitis of the obstructive type. Obstructions, such as inflammatory stricture of the duct, are not included in this group.

4. *Traumatic Vesiculitis.*—Trauma directly applied to the vesicle is the prime cause of a number of cases of inflammation. Ill-applied massage is the commonest. Rough treatment by the rectal finger, in the course of a suprapubic prostatectomy, is frequently the origin of a post-operative vesicular flare-up.

Clinical Picture.

By far the commonest infection of the seminal vesicles is extension of gonococcal inflammation, and to such cases, therefore, our subsequent remarks will be confined. In acute vesiculitis the symptoms may vary within wide limits. There may be straining and painful urination, often amounting to vesical tenesmus; constant shooting pains in the perineum, epigastrium, rectum, and anus; direct and referred pains on urination and defæcation; retention of urine; vomiting; tympany; constipation; abdominal tenderness; persistent erections and painful blood-stained emissions. Such a picture is accompanied by a hot, tender, fluctuating vesicle, swollen and enlarged, and bulging ominously in the entire space immediately above the prostate. On the other hand, the vesicles may be involved in the course of an acute gonorrhœa with no local symptoms, and the examining rectal finger may fail to detect the parenchymatous changes in the gland.

It has been said that vesiculitis is always bilateral, but in our experience it was not rare to find gross vesiculitis in one vesicle, while the other vesicle had a normal exudate, was normal to rectal touch, and gave a ventriculogram which, in contrast with its fellow, showed no radiographic evidence of disease.

The clinical picture of chronic vesiculitis is equally varied. There may be no symptoms, so that the implication of the vesicles is only discovered as the result of a precipitate joint attack, an unresolving iritis, a phlebitis of the internal saphenous vein, or merely a routine rectal examination. On the other hand, a patient may suffer from a recurring gleet, a recurring epididymitis, irregular bouts of urgent urination, indefinite pains in the lumbar region, flanks, and thighs; alteration in sexual powers and sensations, aching pain in the testicles, or pronounced symptoms of sexual neurasthenia. It is well known that the gonococcus may live unsuspected in the vesicles for many years, and then may suddenly acquire new virulence and assume pathological importance. Iritis in men over 50 is not infrequently due to a gonorrhœa of some 20 or 30 years before. The significance of the vesicles is well known as the focus of infection in gonorrhœal arthritis.

The symptomatology may be that of a kidney or bladder lesion and only on full investigation is the vesicle found responsible. The ureter, for example, may be involved in the infiltration of a perivesiculitis, and kidney changes ensue.

The normal vesicle is impalpable unless greatly distended. The acute condition accompanied by a hot, exquisitely tender, swollen, fluctuating vesicle is straightforward, but the chronically infected vesicle, with its infiltrated walls matted together in a perivesiculitis, without accompanying swelling, sclerosis or pain, is often extremely difficult to define by rectal palpation. Should secretion be obtainable, it is found to contain pus and bacteria. Frequently, however, the inflamed vesicle is not draining and secretion cannot be obtained. Even under such circumstances no great swelling of the gland can be made out per rectum.

It may happen that an acute vesiculitis exists while the urine in all three glasses is clear and free from pus or other débris. Kidd describes a dull thin haze of pus, of a peculiar and characteristic appearance, as diagnostic of vesiculitis, but we have found interpretation of the urine very much more difficult.

* A paper read before the Twentieth South African Medical Congress. Since its delivery we have had to chronicle the death of Dr. Reith Fraser.

Indeed, the urines of two cases of vesiculitis are very seldom alike. Much depends on the state of the urethra and prostate. If these are not implicated, and the vesicles are not draining, the urine is invariably clear. Indeed, gonococci have frequently been recovered from the vesicles of men suffering from iritis, who have passed clear urines for over 30 years. In these cases diagnosis can only be made by rectal palpation of the vesicles, combined with bacteriological examination of the secretion.

Vesicular Massage.

Many writers are enthusiastic about the efficiency of vesicular and prostatic massage, while others regard it as of little use, although, conservatively, it is the best method at our disposal. Keyes tells us that "a constipated movement of the bowels will often squeeze out more semen from a boggy prostate than any finger can. A seminal emission is never so small as the few drops extruded by massage. Yet, for the period between the subsidence of acute gonorrhœa and the return to cohabitation, massage is the best alleviation we have to offer for the treatment of chronic prostatitis and vesiculitis."

It must be recognised that an emission during acute vesiculitis is a deleterious trauma, while in the chronic state the resumption of normal sexual function is the basis of cure. Indeed, as Keyes remarks, "sexual starvation or gluttony is as bad for the chronically inflamed sexual organs as constipation and gluttony are for the chronically inflamed digestive organs." Unskilled and indiscriminate massage certainly does little good. Massage is an intelligent manœuvre and must be carried out intelligently, with due regard to the pathological condition. It is idle and frequently harmful to massage blindly until either the finger or the patient tires. The object of massage is to improve the circulation of the parts, increase the muscular tone and, as far as possible, secure free drainage. Thus certain cases require severe massage, while in others only the mildest manipulation is sufficient. Nor must it be forgotten that vigorous massage on occasion may precipitate an acute vesiculitis, prostatitis, or epididymitis.

There is a very large percentage of cases, however, which fail utterly to respond to such conservative methods. It is true that many are benefited in the most astonishing manner by the administration of three or four doses of normal horse serum, some foreign protein such as aolan or casein, or intravenous sulfarsenol, but a large number still remain unresolved. Hot rectal douching, diathermy, urethrovesical irrigation, accompanied by urethral dilatation and the removal of any urethral focus, have been employed pari passu with vesicular massage without avail. The percentage of such cases is very high indeed.

Catheterisation of the Ejaculatory Ducts.

One other conservative attempt to secure drainage of the vesicles made by urologists is catheterisation of the ejaculatory ducts. Urethrovesical irrigations and dilatation of the deep urethra are first carried out until a large urethroscope tube can be introduced without trauma. Under local applications the veru rids itself of its pathological products. When this stage is reached the prostatic utricle and ejaculatory ducts are explored. Luys maintains that catheterisation of these canals is necessary in the majority of instances and absolutely indispensable in many.

This difficult procedure has also been carried out by Young, of Baltimore. Kidd, however, states that it is not possible to catheterise these ducts except in a few cases. McDonagh is equally emphatic, concluding: "I have yet to see a case in which such a procedure has been successful." Our own experience has been that in a urethra of more or less normal anatomy it is not unduly difficult to persuade a Young's double tube to enter the orifices of the ejaculatory ducts; but to inject medicament is another matter, as it regurgitates into the urethra and none enters the vesicle. Endeavours to persuade the catheter farther along the duct have invariably terminated in traumatism. In a pathological urethra we have frequently failed to locate the ducts with sufficient accuracy even to allow of an attempt at catheterisation.

Diathermy.

Cumberbatch and Robinson have described their methods of dealing with seminal vesiculitis by means of diathermy, and are satisfied that the "treatment possesses therapeutic value in cases of gonococcal prostatitis and vesiculitis," but it is extremely doubtful if diathermy alone will cure vesiculitis. As an adjunct to other measures, however, it is a line of conservative management of undoubted value.

Vasotomy and Vasostomy.

The operation of vasostomy, first advocated by Belfield, has proved a distinct advance in the treatment of seminal vesiculitis, and the principle of applying medication to the vesicle via the vas has found a definite place in the treatment of these structures.

The operation consists essentially of:—

1. By means of digital manipulation through the shaved and purified skin of the scrotum, the vas is separated from the remaining structures of the cord and fixed by means of a transfixing needle on the scrotal side of the penoscrotal angle.
2. An incision of 1 cm. is then made with a sharp scalpel, directly over the vas thus fixed, and the vas lifted free from its connective tissue coverings.
3. An incision with a fine-pointed blade is made longitudinally into the stripped vas and the lumen exposed.
4. A blunt-pointed needle is introduced into the lumen and through this the medicament is injected.

The operation can be performed under local anæsthesia without any complaint of vesicular colic, and after a little practice can be completed in from 5–10 minutes. Many modifications of the procedure have been advocated. Some observers report methods of "percutaneous puncture," but we have found it sufficiently difficult to be certain of entering the lumen of the vas when it is fully exposed and clean. Puncture of the vas with a sharp needle, after it has been freed, is less satisfactory than first incising longitudinally. A longitudinal incision makes one absolutely certain of entering the lumen, and a longitudinal slit is less damaging to the vas than a transverse one.

In the early cases of our series, selected for operation on account of the chronicity of the condition, we used the Belfield technique of ligaturing the edges of the vas incision to the edges of the skin to facilitate repeated injections, but local œdema and lymph exudate made it difficult to find the lumen to reintroduce the needle. We tried tying a needle within the vas, passing a strand of fine silkworm-gut along the vas for a distance of 5–6 inches. A needle could be threaded over this and introduced into the vas on the principle of a tunnel bougie. Before withdrawing the needle the gut was replaced through the needle and the needle withdrawn over it and the gut left in. This procedure we still adopt if for any reason we desire to give more than one injection within 48 hours.

In three of our cases where the vas was retained at skin level for repeated injections it could not be returned to the deeper scrotal tissues on account of rigid adhesions, and spermatic fistulæ developed.

In view of these difficulties we tried single large injections of a stronger chemical (25 per cent. argyrol), returning the vas immediately, after washing the chemical through with 1 or 2 c.cm. of saline and closing the wound with a single Michel clip. The injection is made with a 10 c.cm. record syringe, and continued until a definite resistance is felt, or 15 c.cm. have been injected. In some cases the resistance increases and then suddenly gives on slightly increased pressure, and in these we have found by urethral catheter that at the moment of "give" the black argyrol enters the urethra. Where no resistance at

all is felt the argyrol flows through to the urethra almost at once. Where resistance is felt, after, say, 6–10 c.cm. have been injected, no medicament is recovered immediately from the urethra, and in these cases it is our practice to leave the medicament within the vesicle.

In some cases after a varying time the urine shows the drug; if none has appeared in the urine at the end of 48 hours we proceed with gentle vesicular massage, in the course of which the distended vesicle can often be felt to collapse, evacuating its contents.

In these cases it has been easy to appreciate the difference in the effect of vesicular massage, which before operation gave a scanty result, but afterwards succeeded in effecting the evacuation of the vesicular content.

In one case only has there been any suspicion of rupture of the vesicle. In this case definite symptoms of rectal irritation and an indurated mass, palpable per rectum, appeared within 24 hours of operation, but the symptoms subsided after hot rectal douching.

We have found the above procedure of great value in clearing the chronic type of case so graphically described by Kidd, and in the acute case of almost equal value. In every case a course of massage, vaccine, urethral dilatation and instillation, &c., is carried out subsequently.

In a type of case, which must frequently pass as "typhoid," a vasostomy has exaggerated the temperature and toxæmia for 24 hours, and then with the appearance of the argyrol in the urine the temperature has dropped, as it does after the evacuation of pus from an abscess. We employ vasotomy as a routine in epididymitis cases calling for epididymotomy and have observed no tendency to relapse.

In certain cases where we have been able to introduce medicament the vesicle appears to be loculated, so that only the portion in proximity to the ejaculatory duct drains satisfactorily. The rectal feel of such a case is always that of a firm, sclerosed, not much distended vesicle.

Value of Vasostomy.

The most important criticism of vasostomy has been that it tends to cause stricture of the vas and, if bilateral, probably sterility. The objection is not entirely groundless, especially if the vasostomy is kept open over a fairly long period, though there is less tendency to stricture formation than might be imagined, and with our procedure it is to all intents and purposes negligible. The danger of stricture lies mainly in the amount of damage caused to the vas from trauma at operation, subsequent manipulation with the risk of secondary infection, and the damage directly due to the injection of strong chemicals. These causes are minimal with one single injection well washed through and the wound immediately closed. We do not consider it advisable to keep the wound open longer than 48 hours, and if more injections seem indicated we prefer to carry out a second vasotomy.

On reviewing the literature we have been struck by the tendency of certain observers to credit vasostomy with immediate and complete cure. Our own view, however, is to regard the operation as an adjunct of very great value to conservative measures. It initiates resolution and renders conservative manœuvres, previously futile, effective. Its greatest value consists in shortening the length of treatment (probably by 75 per cent.) and in converting a case which will not respond to conservative measures into one that will. The fact that the operation can be performed under local anæsthesia adds greatly to its practical value.

Vesiculotomy and Vesiculectomy.

In contrast with the facility of attacking the vesicle via the vas, direct attack with vesiculotomy or vesiculectomy is an operation of great gravity. The perineal route requires an experienced operator. The goal to be reached is not easy from the anatomical standpoint, and the danger of injuring important structures, particularly the rectum, is very real. However, certain cases demand direct attack; in particular, those with acute inflammatory retention in the vesicle; old-standing sclerotic cases occasioning pain, neurosis, or focal infection; cases of ischio-rectal abscess originating from a ruptured vesicle, and cases where ureteral obstruction has resulted from involvement of the ureter in the sclerotic infiltration of a perivesiculitis.

Vesiculectomy is the operation of choice, and only when actual excision of the vesicle is too difficult is vesiculotomy indicated. Care must be exercised to open the vesicle as completely as possible, to scrape its walls with a sharp spoon, and apply pure carbolic to the curetted area. Occasionally only, in an acute case, where vasotomy has failed, is simple incision of the vesicle required, along the lines of a Squire's vesiculotomy.

Summary of Cases.

This communication is based on a series of 32 cases in which operation has been performed. These have been selected from a consultant practice in which probably a much greater percentage of old-standing infections is met with than in an ordinary venereal clinic. The number operated on is approximately 10 per cent. There were three cases of vesiculectomy, in all of which there was ureteral obstruction, one case of vesiculotomy for acute toxæmia with high fever which vasotomy failed to relieve, and 28 cases of vasostomy or vasotomy.

The four cases of vesiculectomy or vesiculotomy resulted in complete symptomatic cure and the removal of all signs of disease. In the remaining 28 cases the vesicle was attacked via the vas, 24 bilateral and 4 unilateral. Of these 11 were vasostomies receiving more than one injection, while in the remaining 17 vasotomy was performed and a single injection made. There were three cases of spermatic fistulæ, all of which followed a vasostomy. The fistulæ were subsequently closed by releasing the vas and burying it. In one case there was suspicion of vesicular rupture following injection, but resolution eventually took place and no untoward consequences were noted. No other unfavourable complication was noted in this series.

In one acute case the result of vasotomy was dramatic, the temperature falling to normal within 12 hours. In the remainder after-treatment was continued for periods varying from three weeks to twelve months before the patient's urogenital system was pus-free, the average being eight weeks.

Conclusions.

From the foregoing discussion three conclusions may be drawn: (1) Conservative methods in the management of gonococcal vesiculitis still hold a premier place. (2) Vasotomy is a surgical procedure which shortens the duration of treatment without serious risk to the patient, and does not carry the tendency to sterility, spermatic fistula, and scrotal nodulation and infiltration which is associated with vasostomy. (3) In cases where direct attack on the vesicles is called for, vesiculectomy holds a distinct preference to vesiculotomy.

STOCKTON HOSPITAL EXTENSION.—Princess Mary Viscountess Lascelles, on Sept. 23rd, opened the extensions to the Stockton and Thornaby-on-Tees Hospital completed at a cost of £71,000. Sir Frank Brown, who presided, said that it was 64 years since the hospital was founded without endowment of any kind, and it was the boast of Stockton and Thornaby that the hospital had never been in debt—largely owing to the energy and munificence of the Mayor of Stockton, Mr. Leonard Ropner, who had given the final £5000 required besides a previous donation of £10,000. The teachers and school-children, he said, had provided the whole of the cots and beds required for the children's wards, while the builders and operators in the district had built a separate building for the nursing staff.

Clinical and Laboratory Notes.

A CASE OF PERFORATED GASTRIC ULCER WITH APPENDICITIS; OPERATION; RECOVERY

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THE following case is interesting on account of its rarity.

History.—A man, aged 24, first attended the surgical out-patient department at King's College Hospital in September, 1925, complaining of abdominal pain, which had been present on and off for a month before the patient came to hospital. There was no history of vomiting; he was constipated, often having only one action in two or three days. On examination he was seen to be a well-built, muscular man; his teeth were very decayed and there was well-marked oral sepsis. The abdomen moved well on respiration, and the only area where tenderness could be elicited on palpation was over McBurney's point, pressure here causing the patient to feel sick. The appendix was palpable and retrocæcal in position. The case was diagnosed as chronic inflammation of the appendix and his name was taken for admission, and arrangements made for dental treatment before he was admitted to hospital.

The patient was not seen again until five weeks later, when he was admitted to King's College Hospital with acute abdominal pain; temperature 100·2° F., pulse 104, respirations 24. He stated that he had been suddenly seized with pain ten hours before admission, and had vomited several times; the pain had continued without intermission. He looked anxious and worn, in fact he was a typical picture of an acute abdomen. On examination the abdomen was rigid all over, but if anything the rigidity seemed most marked in the right iliac fossa. There was no loss of liver dullness and no pain over the right scapular region. A diagnosis of acute appendicitis was made and the patient was taken to the operation theatre. Under gas and oxygen anæsthesia a definite palpable lump was discovered in the right iliac fossa and the diagnosis seemed certain.

The abdomen was opened through a right paramedian incision. On opening the peritoneal cavity a quantity of sero-purulent fluid escaped. The cæcum and appendix were completely covered by omentum; the appendix was retrocæcal in position, and on removing the covering omentum two large concretions were exposed which had ulcerated through its acutely inflamed walls. Large adherent patches of coagulated lymph were seen on the surface of the appendix. The appendix was removed and its stump invaginated by a purse-string suture. A portion of the acutely inflamed omentum was removed between ligatures. On replacing the omentum within the abdomen a quantity of sero-purulent material with isolated flakes of coagulated lymph escaped from the wound; the upper abdomen was explored with the hand and a hard indurated area was felt at the pylorus. On withdrawing the hand gas was heard to escape. The abdominal incision was lengthened in an upward direction and the stomach explored. A large perforation was seen on the gastric side of the pylorus; the size of the perforation can be judged when it almost admitted the tip of the little finger. There was considerable board-like induration around the perforation, and invagination of the ulcer was impossible. The perforation was plugged with a portion of omentum which was stitched in situ; the condition of the patient did not warrant a gastro-enterostomy being performed. The abdominal incision was closed and a large rubber tube draining the pelvis was inserted into the lower end of the incision. The patient was returned to bed and continuous rectal saline was administered. Recovery was uneventful; the drainage-tube was removed on the fifth day, by which time the patient was having light diet. The wound had completely healed by the tenth day when the stitches were taken out. The patient was discharged from hospital three weeks after his operation and was sent to a convalescent home.

In January, 1926, the patient was examined again; he appeared in good health and the abdominal wound was soundly healed, there being no evidence of a ventral hernia. A barium meal was taken which demonstrated considerable pyloric stenosis, due to the cicatrisation of the ulcer. The patient was advised to come into hospital again and have a gastro-enterostomy performed; this he agreed to do. On Jan. 15th a posterior gastro-enterostomy was performed; the ulcer at the pylorus had healed and the omentum was stretched over it in the form of a web. The pylorus was not occluded by a suture. Recovery was rapid and uneventful, and the patient was discharged on Jan. 30th.

Commentary.

Cases in which two acute abdominal conditions occur at the same time are rare, especially so when the stomach and the vermiform appendix are the organs concerned. Very few cases are to be found in looking through the medical literature, the best recorded cases being those of Sir Watson Cheyne and Wilbe,[1] Warren Low,[2] and Lediard and Sedgwick.[3]

On investigating the pathology more fully, one might expect the two conditions to be more frequently associated, as a diseased appendix is often the indirect cause of ulceration of the stomach. That the vermiform appendix and the pyloric portion of the stomach are in direct lymphatic connexion has been well demonstrated by Braithwaite.[4] There is also a definite venous return to the stomach in cases of chronic inflammation of the appendix where the omentum is adherent; this probably occurs via the epiploic veins directly to the gastric mucosa.

A CASE OF ANILINE POISONING.

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A CASE of poisoning by aniline ($C_6H_5NH_2$) in a boy aged 12 years occurred under the following circumstances.

A lesson in distillation was being given to a chemistry class, aniline being the substance used to demonstrate this process. As the aniline was to be returned to stock after distillation, the master told the boys to be careful that no water was mixed with it. One boy distilled his portion into a wet flask, and when he handed it to the master, the latter said, in a jocular manner, "This is a nice mess. It is not fit to be returned to the bottle. You might as well drink it." This the boy proceeded to do. The master immediately dashed the flask from the boy's hand and made him wash out his mouth. The flask contained less than 2 c.cm. of a mixture of aniline and water, and the master was under the impression that the boy had not swallowed any of it.

The boy carried on at school from 9.45 A.M., the time of the incident, and made no complaint nor did anyone notice anything amiss. At 12.20 he took train to his home and arrived at his station without mishap but collapsed outside at about 12.45, and was carried home. He was then unconscious, the finger-tips were blue and the lips almost black. Oxygen was administered continuously through a funnel from about 1 o'clock and coffee and whisky given frequently from then until 4 o'clock. He vomited repeatedly from 2.30 onwards and at 3 o'clock was roused enough to say that he had taken aniline but immediately relapsed into unconsciousness.

Seen at 10 P.M. he was lying peacefully in bed with his eyes shut. He was very drowsy but could be roused with difficulty when he would open his eyes, but would not answer questions. The skin was a pale lilac colour all over except that the lips, ears, tongue, and the nails of the fingers and toes were of a deep leaden blue. The respirations were slow and very shallow. There was no apparent respiratory distress. The pulse-rate was 120 and the pulse regular and small. There was no dilatation of the heart and no abnormal signs were detected in the lungs. The pupils were widely dilated and reacted very sluggishly to light. There was no injection of the conjunctivæ. There was no paralysis. The tendon reflexes were somewhat diminished.

As it was so long since the ingestion of the poison and he had vomited repeatedly, there seemed to be no point in washing out the stomach. Oxygen was given through a nitrous oxide bag for five minutes at a time with intervals of 15 minutes instead of constantly through a funnel. Very

[1] W. Watson Cheyne and H. Wilbe: THE LANCET, 1904, i., 1641.
[2] V. Warren Low: Ibid., 1904, i., 1789.
[3] H. A. Lediard and R. E. Sedgwick: Ibid., 1904, ii., 761.
[4] L. R. Braithwaite: Arris and Gale Lecture, 1923, Brit. Jour. Surg., 1924, No. 11, p. 7.

soon there was improvement. The patient became less drowsy and began to resist the application of the face-piece of the gas-bag until consciousness was restored sufficiently for him to be reasoned with, after which he took the oxygen well. After about three-quarters of an hour he had recovered sufficiently to sit up and take some tea, the dilatation of the pupils had become much less and the colour had improved greatly. He was then given mag. sulph. ʒii. with tr. belladonnæ ℥v. and water to ʒii. Oxygen inhalations were continued until noon the following day when they were no longer necessary. The mag. sulph. mixture was repeated twice on successive days.

Progress was uneventful. He felt no ill-effects except headache, which persisted for three days. The blueness gradually cleared off, and was completely gone after three days.

Three weeks later he felt quite well and showed no sign of any ill-effects. He stated that he had less than a teaspoonful of the mixture of aniline and water in his mouth, and thought that he swallowed some of it but was not sure how much. After taking it he noticed a burning sensation in his mouth and immediately began to feel dizzy. The dizziness increased but he was able to go on with his work. Just before he got on the train on his way home, two and a half hours after taking the aniline, he noticed that his legs were becoming weak and that the dizziness was much worse.

Commentary.

Poisoning by aniline may take place in a variety of ways. Glaister[1] quotes cases where poisoning resulted from the application to the ear of cocaine in equal parts of aniline and rectified spirits, where babies were poisoned by napkins which had been marked with marking ink consisting of aniline chloride, where children were poisoned by wearing yellow boots which had been stained with an aniline preparation, and several where poisoning took place through the unbroken skin in workers in industries where aniline was used. It is important to remember that aniline is a constituent in many marking inks.

A point of interest in this case is the demonstration of the importance of using a gas-bag when giving oxygen. This patient had had oxygen given by the funnel method for nine hours without any appreciable effect, and on resorting to the gas-bag an immediate effect was noticed. Skilled attention is not required when oxygen is given from a bag. In this case the boy's mother could use it efficiently after a few minutes' demonstration. The method of giving oxygen through a funnel is both wasteful and ineffective.

I am indebted to Dr. E. J. Burnett for the privilege of seeing this case.

A CASE OF INFLUENZAL ENCEPHALITIS.

BY HERMAN S. N. MENKO, L.R.C.P. & S. EDIN., L.R.F.P. & S. GLASG.,

CLINICAL ASSISTANT, HOSPITAL FOR SICK CHILDREN, GREAT ORMOND-STREET.

THE obscure symptoms and unusual course in this case present several features of interest.

M. K., a girl aged 4½, showed spots on her body which had been diagnosed as urticaria. Lotions were applied but did not improve the condition. On the seventh day after the appearance of the spots the temperature suddenly rose to 104° F., which remained constant all day. In the evening I was called and found the following: abdomen covered with a rash typical of lichen urticatus; there were also spots on the child's arms and legs; pulse very frequent. Nothing else was found on examination.

The next day the temperature persisted and remained high, without remission. All means and methods of reducing it failed. Quinine had no effect whatsoever, which was rather remarkable, as will subsequently be noted. A consultation was held, but nothing was definitely ascertained beyond the fact that by now the child had severe diarrhœa, with stools which became more and more offensive, and had very much the appearance of those of typhoid. A culture of the stools revealed large growths of *B. coli*, which were also found in large quantities in the urine. The culture did not show any typhoid organism.

There was no doubt at this stage that one had to deal with a definite intestinal toxæmia, and owing to the fact that large numbers of *B. coli* were present, potassium citrate was given in large doses, and colon lavage applied. The child did not improve in the least for three days, in fact, the temperature remained at 104°, and the condition grew rapidly worse, until collapse occurred, and the child to all intents and purposes was in a moribund condition.

After pulse and heart had stopped for about 30 seconds the patient rallied. The same evening another consultation took place, and in view of the fact that alkaline treatment had no effect, hexamine was started, while rectal salines were given frequently, lactic acid and glucose being added to the salines, and whey given by the mouth. No improvement occurred, and after the second day from the beginning of this treatment the child passed into a state of lethargy. Nervous symptoms now made their appearance, some head retraction was noticed, and on the left side Kernig's sign was present. There was also exaggerated extensor plantar reflex; speech had gone, and the patient was unconscious with incontinence of urine and fæces.

The next day, as no improvement was evident, a cerebro-spinal puncture was done, and about 6 c.cm. of clear fluid withdrawn. The fluid was from all points of view normal except that it was under increased pressure. In the night following the puncture the temperature for the first time began to fall. The head retraction disappeared, but some paralysis on the left side persisted. A catheter specimen of the urine showed a very large amount of acetone, the urine being strongly acid. Again alkaline treatment was resorted to, and potassium citrate in large doses given, while rectal salines and saline injections by the buttock, 10 c.cm. at a time, were given.

In the next three or four days the child did not improve and the temperature remained high, although it never reached the same height as before the puncture. Another consultation took place, particular attention being paid to the condition of the central nervous system. Clinically it was decided not to be a case of encephalitis lethargica. Quinine was given again, and the temperature began to fall in contrast with the earlier experience of its use. Gradually everything became normal, speech came back, and the child is making an excellent recovery.

The following difficulties presented themselves in this case: the total absence of any symptoms; the variations in the phenomena observed; the extraordinary reaction of the patient to drugs; the appearance of a rash, which had manifested itself before the onset of fever for ten days. This case, no doubt, was one of severe toxæmia, leading to an influenzal encephalitis. The value of examining the cerebro-spinal fluid shows it not only as a great help for diagnosis, but also, in my opinion, from the therapeutic point of view.

I wish to express my indebtedness to Dr. Theodore Thompson, Dr. Eric Pritchard, Dr. Wilfred Harris, and Dr. Ellison for their valuable help and advice.

[1] Prof. Glaister: Medical Jurisprudence and Toxicology. 1915. Pp. 783.

A PSYCHOPATHIC HOSPITAL AT EDINBURGH. — Following upon the recommendation of the Board of Control for Scotland that it is time to set up "some form of psychopathic hospital" in Edinburgh, the managers of the Royal Hospital at Morningside have taken the matter in hand. They have spent £20,000 in fitting up the Jordanburn Hospital for this purpose and it will be ready to receive in-patients at about the end of the year; an out-patient department has also been designed. There will be room for about 50 patients.

HOSPITALS AND MOTORING ACCIDENTS.—In the first eight months of the present year the Royal Victoria Infirmary, Newcastle-upon-Tyne, dealt with 619 victims of motoring accidents, 295 of whom remained as in-patients, 100 more than in the corresponding period of 1925. The additional burden upon the resources of the hospital is at the rate of £4500 per annum. There are 1700 cases on the waiting-list, which has reached its present dimensions partly as the result of pressure upon beds caused by motoring accidents. Last year Leeds General Infirmary treated 768 such cases, 319 of which stayed for a total of 4740 days, at a cost exceeding £3000. During the last six months the average has worked out at about 1000 cases a year. The daily average of casualty cases of all kinds at Manchester Royal Infirmary is 75.

Reviews and Notices of Books.

RECENT ADVANCES IN MEDICAL AND ALLIED SCIENCES.

Recent Advances in Medicine. Third edition. By G. E. BEAUMONT, M.A., M.D., F.R.C.P., D.P.H., and E. C. DODDS, Ph.D., M.B., B.S., B.Sc. London: J. and A. Churchill. 1926. With 46 illustrations. Pp. 408. 12*s.* 6*d.*

ONLY two years have elapsed since we welcomed the first appearance of this useful book; already a second and third edition have followed in quick succession, and the authors have revised and rewritten several sections. Descriptions of the tests for pus and mucin in urine and of the method of estimation of the calcium-content of the blood have been added. The authors place no reliance on chemical tests for pus and insist on the necessity for microscopic examination of the centrifugalised deposit. The description of colorimetric methods of both blood and urinary analysis has been amplified, and fresh sections have been written on the sedimentation rate of red cells and size variations in anæmia. The account of H. MacLean's method of estimating sugar in blood has been made considerably clearer than it was in the first edition. The sections dealing with sugar metabolism are brought up to date by a new discussion on the action of insulin and of recent work on alimentary glycosuria. The necessity for constant estimations of the blood-sugar in diabetic patients laid a heavy burden on the general practitioner, as well as increasing the discomforts of the patient, and both alike will welcome the suggested method of treatment without blood examinations after the preliminary diagnostic one. The authors regard the method outlined by them as tolerably safe, provided the patient is acquainted with the preliminary symptoms of hypoglycæmia and can resort to sugar if they should appear. Large doses of insulin on an unmodified diet are deprecated, and, in accordance with accepted modern practice, the practitioner is urged to control the sugar output by diet as far as possible and then to prescribe the minimum dose of insulin necessary to keep the blood-sugar within normal limits. The analysis tables showing the caloric and protein, fat and carbohydrate values of different forms of food and the lists of graduated diets are succinct and clear, and the authors have laid the busy practitioner under a still greater debt of gratitude by setting out the graduated diets in the form of daily meals. A new chapter on the treatment and after-care of diabetics has been written for this edition. Chapter VI. contains an enlarged description of the various methods of gastric analysis and a critical estimate of the value of the fractional test-meal. The main utility of the fractional meal is in the investigation of the pyloric function, the examination of cases of achlorhydria, and the diagnosis of carcinoma. The authors point out that the old idea that there is a direct association of hyperchlorhydria with gastric ulceration is not supported by modern investigation. There is an excess of acid and the characteristic "climbing curve" in the fractional meal because there is pylorospasm, and the "climbing curve" is not given when the ulcer is remote from the pylorus. A good deal has been added to the chapter which deals with the liver. The galactose test is described and the account of the phenoltetrachlorphthalein test is enlarged. The van der Bergh test is dealt with fully.

Some beautiful radiograms illustrate the new section on the investigation of the gall-bladder by X rays, and the examination of the lungs after injection with lipiodol. The authors do not enter into the controversy surrounding the Schick test, but describe the reaction with precision. A chapter on the Dick test is included. Cutaneous protein tests, desensitisation, and the peptone treatment of asthma are discussed. The subject of protein shock is not mentioned; some remarks on the pathological basis and therapeutic value of non-specific irritants might well be included in the next edition, for although the bulk of the book is concerned with clinical methods of investigation, useful notes on practically all the latest lines of treatment have been included.

This book has in a short time achieved a signal popularity, which this edition should confirm and extend. Everyone needs to have reliable information on recent advances in medicine, and a combination of physician and biochemist as joint authors is an ideal one. The bibliographies at the end of each chapter are good indications of the latest original work and provide ample opportunity for the reader who wants to follow up any particular problem.

Recent Advances in Biochemistry. By JOHN PRYDE, B.Sc. St. And., M.Sc. Wales, Lecturer in Physiological Chemistry, Welsh National School of Medicine, University of Wales; formerly 1851 Exhibitioner in Chemistry. Same publishers. 1926. Pp. 348. 12*s.* 6*d.*

THE author of this book, as he states in the preface, has experienced great difficulty in selecting topics suitable for his purpose from the many branches of biochemistry. He has necessarily omitted many interesting and instructive aspects of the question, since under the heading biochemistry are now included chemical pathology and the chemistry of naturally occurring substances and their industrial aspect. Mr. Pryde has selected for notice the more purely chemical and physico-chemical aspects of substances of physiological importance, though in a book of this size he has obviously been unable to cover the whole field.

The book opens with an excellent chapter on protein catabolism; his description gives a clear idea of the deaminisation and oxidation of urea, which will be new to many, though the captious might complain that this work can hardly be termed "recent"; the references at the end of the chapter show that much of the work described dates from 1912, 1910, and even 1902. The second chapter is concerned with recent theories as regards the physical chemistry of the proteins, and supplies a readable account of the views of the late Prof. Loeb. The subject is a difficult one to explain in a few words, and Mr. Pryde deserves tribute for elucidating it. Chapter III. on the nucleo-proteins well summarises the more recent work of Walter Jones, Levene, and other workers. The references to this section are good, though for the benefit of the general reader some of the work on the synthesis of purines in the laboratory, notably Emil Fischer's researches, might have been included. The chapter on carbohydrates is perhaps the most valuable one in the whole book. The structure and biological utilisation of the different carbohydrates and their metabolism are admirably dealt with, and the accounts of some of the recent laboratory work on the constitution of these substances leave nothing to be desired. Succeeding chapters are devoted to the fats, phosphorus compounds, and sulphur. Into a brief space Mr. Pryde has compressed a detailed account of the occurrence of the various vitamins and of their importance, and an excellent series of references is included. The three final chapters on hæmoglobin, the chemical basis of specific immunological reactions, and chemotherapy are interesting as summaries of recent work, but give the impression that Mr. Pryde takes a more perfunctory interest in these studies and that the preparation of these chapters was less a labour of love than a duty.

As a whole this book will be found of the utmost value, not only to students who wish to have clear and accurate summaries of work which at the moment can only be found in special journals, but also to laboratory workers who may not have the time to study original papers in any other line of work than that on which they are engaged.

Recent Advances in Physiology. Second edition. By C. LOVATT EVANS, D.Sc. Lond., M.R.C.S., L.R.C.P., F.R.S., Jodrell Professor of Physiology, University College, London. Same publishers. 1926. Pp. 370. 12*s.* 6*d.*

THE changes of note in this excellent summary of the latest additions to physiological knowledge are few in number but of great significance. Thanks to the brilliant investigations of Dr. C. R. Harington at University College Hospital Medical School, the structure of thyroxin has been definitely determined, and the final compound all but completely synthesised. Of great practical importance is the same worker's new method for extracting the hormone from the crude thyroid tissue, a method which gives a yield of about 0·03 per cent. of the fresh gland. It will be remembered that Kendall was able to obtain a yield of only 0·001 per cent. by his method. The thirty-fold increase obtained by Dr. Harington will inevitably bring down the cost of extracting thyroxin, a cost which before was prohibitively large, to a level which will enable the drug to be produced on a commercial basis. Medical men should shortly be in a position to administer definite and known amounts of the active principle of the thyroid gland and no longer to be dependent on preparations, the dose of which, in the absence of an accurate method of assay, must be difficult to gauge.

A second important addition to this volume is the account of the mechanism of the action of insulin, which has now been brought to a satisfactory and comprehensible standpoint by the recent work carried out at the National Institute for Medical Research. By making use of the spinal eviscerated animal with constant infusion of glucose it has been shown that the administration of insulin causes an increase in the glycogen reserves and in the oxygen consumption of the preparation. Further, an accurate balance-sheet has been constructed between the amount of sugar disappearing from the blood on the one hand, and that partly deposited as glycogen and partly oxidised to CO_2 and H_2O on the other. The disappearance of glycogen from the muscles, which had been so repeatedly observed after large doses of insulin, has been shown to be due to the convulsions associated with the fall in blood-sugar. These convulsions, of course, do not occur in the spinal preparation. Further, insulin inhibits the transformation of protein and fat to carbohydrate, a transformation which we know to be abnormally great in cases of diabetes mellitus. An excess of insulin therefore causes the metabolism of the animal to swing entirely to the carbohydrate side, so that in the absence of a sufficiency of glycogen both the respiratory exchange and body temperature gradually fall.

We commend this fascinating volume whole heartedly to those students of biology and medicine who wish to obtain a scientific insight into some of the more important problems with which physiologists are grappling at the present time.

CHRONIC INTESTINAL STASIS.

A Radiological Study. Second edition. By ALFRED C. JORDAN, C.B.E., M.D. Camb., M.R.C.P. Lond., Corresponding Foreign Member, Belgian Royal Academy of Medicine. London: Humphrey Milford, Oxford University Press. 1926. Pp. 230. 21*s.*

THE first edition of this volume appeared in 1923, and the new edition contains no changes of outstanding importance. This book is of particular interest because many of the author's conclusions are not shared by the majority of his colleagues. The impartial reader is left with the impression that the whole argument of the book is designed to prove that intestinal stasis is a factor of far greater universal incidence and importance than most authorities believe, and, as was said in the review of the first edition, the author is safest when examining the intestinal viscera almost wholly from the point of view of the skilled radiologist. The pictures, many of which compare unfavourably with present-day standards, do not reinforce the argument; they are too often unconvincing. The chapter on the author's own apparatus should either have been left out or brought up to date, especially in regard to the interpretation of the "stasis" shown. For example, ileal stasis is present in practically every healthy patient who has any degree of constipation, and readily disappears when the bowels are cleared so that the food can pass on; therefore, since the author's rule is to allow no aperient to be taken for two days prior to the X ray examination, not much can be deduced from the examples of ileal stasis depicted. Dr. Jordan's book can be recommended as an able exposition of those extreme theories of the dangers of intestinal stasis which are held by a section of the medical public.

A MANUAL OF CLINICAL PROCEDURE.

By ROBERT A. KILDUFFE, A.B., A.M., M.D., Director of the Laboratories, the Atlantic City Hospital. London: Henry Kimpton. 1926. Pp. 287. 12*s.* 6*d.*

THE author states in his preface that he has set out to write a manual of laboratory practice suitable for the general practitioner, and he has succeeded admirably. He has kept a steady and unwavering eye upon his chosen audience—the family doctor who wants to push the diagnosis of his cases beyond the limits that can be achieved by the use of his five senses, even when one of them is aided by the stethoscope. The selection of matter is excellent and the procedures described could readily be performed with the minimum of equipment. The more elaborate methods of diagnosis, such as those involving fixation of complement and so forth, are omitted, though the indications for their performance and the interpretation of their results are fully discussed. An admirable little book.

THE PATHOGENESIS OF CHRONIC GASTRIC ULCER.

Die Pathogenese des Chronischen Magendarmgeschwürs. By Dr. J. R. F. RASSERS, Gastroenterologist at the Reichs-Universität, Leiden. Leiden: S. C. Van Doesburgh. 1926. Pp. 69.

THIS is an interesting monograph in which the author seeks to prove, by the experimental method, that gastric ulcers arise from a failure of the protective mechanism against self-digestion, due to lack of sodium ions in the gastric mucosa. He obtained ulcers in the stomach and duodenum by pouring acid pepsin solution daily into the stomachs of dogs, living on a diet deficient in sodium chloride. The book is well worth reading, though the relation of the findings to human gastric ulcer are not always brought out convincingly.

TUMOURS OF THE COLON AND RECTUM.

By JEROME M. LYNCH, M.D., Surgical Director, St. Bartholomew's Hospital, N.Y.; and JOSEPH FELSON, M.D., Attending Pathologist, St. Bartholomew's Hospital, N.Y. New York: Paul B. Hoeber. 1925. Pp. 259. $12.00.

THOUGH this is a very well-printed monograph, it is difficult to read. It consists of a compilation of the literature, a number of cases being interspersed, and lacks the personal note so valuable in contributions of this kind. The chapter on operative treatment is sketchy, but the authors claim "beautiful results in carcinomata of the rectum" by an interesting method, in which the growth is removed by the abdominal route, leaving a colostomy and the anal canal, continuity of the alimentary channel being restored 6–12 months later. On p. 168 there are important misprints on line 4, where "above" appears for "below," and line 11, where "prone" appears for "supine." The book is not likely to make a strong appeal to English readers.

STUDENTS' GUIDE—SESSION 1926–27.

DENTAL SURGERY.

(*Continued from p. 712.*)

TEACHING INSTITUTIONS IN DENTISTRY.

OF teaching institutions those connected with the several universities have now been described in some detail, but in addition to these there are a number of institutions which offer facilities to dental students and which are here set out under their localities.

LONDON.

Royal Dental Hospital of London, School of Dental Surgery, Leicester-square.—A school of the University of London. Women are now admitted as students and are eligible for all hospital appointments and school prizes. The school provides the special dental education required by the Royal College of Surgeons for the Licence in Dental Surgery. The general part of the curriculum may be taken at any general hospital. The hospital is open from 9 A.M. to 5 P.M., there being one staff for the morning and another for the afternoon of each day. Pupils are received for the training in dental mechanics recognised by the curriculum. The instructors at the commencement of each session give a course of lectures on Operative Dental Surgery. The five house surgeoncies are held for four months each and are open to all qualified students. The lecturers, in addition to their lectures, give special demonstrations on the Microscopy of Dental Anatomy and Dental Surgery. The lecturer on Dental Mechanics also gives practical demonstrations in the laboratory. There is an Entrance Scholarship in Chemistry and Physics of the value of £25. One Entrance Scholarship in Dental Mechanics and Metallurgy, value £25, open to pupils of the Hospital only. One Entrance Scholarship of £25 in Dental Mechanics, open to pupils of private practitioners. The Saunders Scholarship of £20 and Saunders Prize of £5 awarded to second year students. The Storer Bennett Research Scholarship for Scientific Research in any branch of Dental Surgery, value £50, is awarded triennially. The Alfred Woodhouse Scholarship of £35 and the Robert Woodhouse Prize of £10 for Practical Dental Surgery. The "Lonnon" Bursary of £25 for second year students. The "J. A. Smith" Scholarship of £50 for students in their first year's hospital practice. Prizes and certificates are awarded by the lecturers for the best examinations in the subjects of their respective courses at the end of the summer and winter sessions. Fee for two years' hospital practice required by the curriculum, including lectures, £70 in one payment, or £73 10*s.* in two yearly instalments. The curriculum requires two years to be passed at a General Hospital; the fee for this is about £52 10*s.* Both hospitals can be attended simultaneously. For the lectures in Chemistry and Physics for the Preliminary Science or Pre-Medical Examination £13 13*s.* The fee for the instruction in Dental Mechanics and the two years' hospital practice required by the curriculum is £200 if paid in one instalment, or 200 guineas if paid in three equal instalments. The fee for tuition in Dental Mechanics is £70 per annum; for one year's hospital practice £28.

University College Hospital Dental School, corner of Great Portland and Devonshire-streets, W.—This Hospital and School has recently been thoroughly reorganised, and is now fully equipped with all the most modern appliances. Students are entered as students of University College Hospital, and, as such, attend the classes of Anatomy and Physiology in University College, which is a few minutes' walk from the Dental Department in Great Portland-street, hitherto known as the National Dental Hospital, the first Dental School to admit Women Students. Practical courses to comply with the R.C.S. curriculum are held. Clinical Lectures and Demonstrations are given, and each student on entering passes through a preliminary course under a demonstrator. A calendar containing full information as to lectures, fees, prizes, &c., may be had on application to the Sub-Dean for Dental Students, who attends at University College Hospital Medical School, University street, W.C. 1, on Tuesday and Friday mornings at 10.30 o'clock.

Guy's Hospital.—The work of the Dental Department begins daily at 9 A.M. both in the extraction rooms and in the conservation room. The Extraction Rooms: There is ample accommodation for both general and local anæsthetic extractions, together with waiting- and retiring-rooms. Patients are admitted between 8.45 and 9.30 A.M., and are seen by the dental surgeon for the day, the staff demonstrators, the dental house surgeons, and the dressers. The Conservation Room is open from 9 A.M. till 5 P.M. It has a floor space of over 7000 square feet, and affords accommodation for about 100 dental chairs, with the necessary equipment of the most modern type for the use of the Dressers, who, under the supervision of the Staff, perform the various operations of Dental Surgery. There is a separate room for dentine patients affording accommodation for 15 chairs. The Members of the staff attend every morning and afternoon to give demonstrations and otherwise assist students in their work in the Conservation Room and Prosthetic Laboratory. The Probationers' Laboratory is supervised by three of the staff demonstrators, and instruction is given in operative dentistry on a "mannikin" to students during their first three months of clinical study. Students in Dental Prosthetics are received, and a graded, systematic, and full course of instruction, extending over two years, is carried out under the supervision of the Director of the Prosthetic Laboratory, assisted by two demonstrators and five mechanics. Dental students have the opportunity of attending at this hospital the whole course of instruction required by the examining board for the B.D.S. Lond. or L.D.S. Eng.—viz., the complete course in dental prosthetics, the special lectures and practice of the Dental Department, and the general lectures and practice of the Medical School. The fees for these two courses may be paid separately or together, or they may be combined with the fees required to be paid for the course for a medical diploma. Students who enter for a medical as well as a dental diploma are allowed to pursue their study of Dentistry during any period of their medical course most convenient to themselves without further charge. Two Entrance Scholarships are awarded in July of each year, a War Memorial Scholarship in Arts of the annual value of £40 for four years; and a Junior Science Scholarship of the value of £40 per annum for not more than four years. Prizes of the aggregate value of £40 are awarded for general proficiency and for skill in Operative Dentistry. The Newland-Pedley Gold Medal for Operative Dentistry is also awarded annually. Dental students enjoy the privileges of students in the Medical School. Application for studentship should be made to the Dean of the Medical School.

Appointments: All appointments are made according to the merits of the candidates, as determined by a committee of the Dental Staff. Eighteen house surgeons, 15 assistant house surgeons, and four student demonstrators of Dental Histology are appointed annually. The following appointments are held by students: Full surgeon's dresser, assistant surgeon's dresser, dresser in the children's department, casualty dresser, clerk to the anæsthetist, dresser in the gas extraction and local anæsthetic extraction rooms, and probationary dresser.

King's College Hospital.—The Dental School is part of the Medical School of King's College Hospital, and was opened in November, 1923. The Dental Out-patient Department of the Hospital is used for the performance of dental extractions. A large

Conservation Room with provision for 40 dental chairs has been equipped. Smaller rooms are used for clinical teaching and administrative requirements, and a specially equipped laboratory for training in the art of dental mechanics. An X ray apparatus has been installed for special use in dental skiagraphy. A museum containing a large number of specimens illustrating oral, buccal, dental, and other diseases is available for teaching purposes. The library, lecture theatre, lecture rooms, common rooms, and the refreshment room are all available for the use of students. Courses of study, including practical work, are provided for the degree of Bachelor of Dental Surgery of the University of London, and for the Diploma in Dental Surgery of the Royal College of Surgeons of England. Special arrangements are made for those students who wish to take a medical degree or qualification in addition to a degree or diploma in Dental Surgery. Full particulars of the Dental School may be obtained on application to the Dean, Dr. H. Willoughby Lyle, or to the Secretary, Mr. S. C. Ranner, M.A., King's College Hospital, Denmark Hill, London, S.E. 5.

London Hospital.—This school is a part of the London Hospital and Medical College, and is fully equipped on the most modern lines and with the latest appliances. It provides a complete curriculum in all subjects for the B.D.S. Degree and for the L.D.S. Diploma, and is admirably adapted for the purpose of teaching. The Conservation Room is well lighted and ventilated and fitted with pump chairs of the latest pattern; the fountain spittoons at many of the chairs have been specially designed. Each spittoon has attached to it a saliva ejector, hot and cold water, compressed air, gas and electric current, also a swing bracket to carry the students' cabinet. Electric sterilisers are supplied in each department and motor engines where required. The School possesses in addition to the Theatres, Laboratories and Museums in the College, a special Museum of Dental Anatomy and Surgery, Operative Dentistry, Prosthetic and Extraction Rooms, and Laboratories for Practical Metallurgy and Prosthesis. A systematic course of instruction is arranged for pupils. The up-to-date Laboratory contains every modern apparatus and is in charge of a skilled curator and his assistants. Connected with the Medical College and Dental School are a Library, Athenæum, Clubs' Union, Dining Hall with moderate tariff, Students' Hostel, and an Athletic Ground. For full particulars as to Scholarships and Prizes, fees and course of study advised, apply to the Dean, Prof. William Wright, who will be glad to make arrangements for anyone wishing to see the Dental School and Medical College.

London (Royal Free Hospital) School of Medicine for Women.—Full courses are arranged for women students, in conjunction with the Royal Dental Hospital, Leicester-square, for the study of dentistry, and in preparation for the B.D.S. Degree of the University of London and the Licence in Dental Surgery of the Royal College of Surgeons of England, at the London (Royal Free Hospital) School of Medicine for Women.

PROVINCIAL.

Birmingham Dental Hospital, Great Charles-street.—Dean: Cyril Howkins, C.B.E., D.S.O., M.R.C.S., L.D.S. The Dental Hospital was founded in 1858, and was recognised by the Royal College of Surgeons in 1880 for the teaching of Dental Students. Having an annual attendance of about 21,000 patients, it affords every advantage for students about to enter the profession to acquire a thorough practical knowledge, as required by the Medical Council. The present very fine building, which compares favourably with any similar institution, was opened on July 6th, 1905. It has accommodation for 100 students. The equipment is in accordance with the most modern requirements for the efficient teaching and practice of Dental Surgery, including Radiology and Ultra-Violet Ray Therapy and a new department for Practical Pathology and Bacteriology. The operations performed annually average 35,000, including gold and other fillings, crowns, bridges, porcelain inlays, and injections for block and infiltration anæsthesia. The orthodontic department is one of the foremost in the country. The Prosthetic and Mechanical Department is large and well lighted and under a highly skilled instructor who is always present. By arrangements with the Birmingham University and with the General and Queen's Hospitals the entire course of Lectures, Hospital Practice, &c., may be completed for an inclusive fee of £144 4*s.* 6*d.*, or including Mechanical Pupilage, £255 15*s.* 9d., inclusive of Examination fees for L.D.S. Birm. The instruments and materials necessary for Hospital Practice cost about £45. The Composition Fee for the courses required for the L.D.S. of the University, or any of the Corporations alone, is £75, payable in two annual instalments at the commencement of the first and second years; that for the courses required for the L.D.S. and the Degree in Dentistry of the University is £93 15*s.*; that for the L.D.S. in combination with the M.R.C.S. and L.R.C.P. is £115; and that for the M.B., Ch.B., and B.D.S. is £120. All of these composition fees are payable in two annual instalments at the commencement of the first and second years. Each of these fees covers the cost of the courses given at the University for the qualifications indicated, but does not include fees for Hospital teaching, nor Pre-Dental year Chemistry and Physics. For two years' dental hospital practice the fee is £26 5*s.*, payable in two instalments of £13 2*s.* 6*d.* each at the commencement of the first and second (hospital) years respectively. For two years' mechanical pupilage, £111 11*s.* 3*d.*, which may be paid in two annual instalments of £65 12*s.* 6*d.* and £45 18*s.* 9*d.* respectively; mechanical pupils may join for a probationary period of one month, fee £6 11*s.* 3*d.*, which is deducted upon payment of the full amount. For general surgical hospital practice, lectures, and demonstrations: Surgery, two winters, £13 2*s.* 6*d.* A Dental Scholarship is offered annually of the value of £37 10*s.* It is awarded to the student who, entering for the Dental Degree of the University, shall pass the best examination in the subjects studied during his apprenticeship. Application for admission must be sent to the Dean of the Medical Faculty, Birmingham University, or the Dean of the Dental Hospital, Birmingham.

Leeds University School of Dentistry.—The School of Dentistry is adequately equipped to provide for the complete training of the dental student. The School forms a part of the Leeds School of Medicine, whilst the instruction in clinical and mechanical dentistry is carried out in the Dental Hospital at the General Infirmary. The courses of study are mainly designed to meet the requirements of the B.Ch.D. and L.D.S. Leeds, but every opportunity is afforded to students preparing for the degrees or diplomas of other licensing bodies. Full-time demonstrators give the instruction in clinical dental surgery, prosthetic dentistry, and mechanics, which is carried out under the supervision and direction of members of the Honorary Staff, two of whom are in attendance each day. Special facilities are provided for instruction in Orthodontia, Dental Radiography, Local and General Anæsthetics. Prizes are offered for competition to pupils and students in their respective years of study. Communications should be addressed to the Warden, School of Dentistry, Leeds, from whom a prospectus may be obtained.

Dental Hospital of Manchester.—This hospital is in association for teaching purposes with the University of Manchester and the Royal Infirmary, and is in the centre of a very large population. Courses of study are provided to meet the requirements of the various examining bodies, including those of the University of Manchester for the qualifications L.D.S. and B.D.S., and the L.D.S. of the Royal College of

Surgeons of England. Clinical instruction is given in Dental Prosthetics, Operative Dentistry, Diagnosis and Extraction, Orthodontics, Dental Surgery, Radiography, and Anæsthetics by specially appointed Clinical Teachers.

For the whole course of hospital instruction for the L.D.S. (including two years' mechanical training) the fee is £131 5s., paid in instalments. For the two years' Operative Course only, £26 5s., paid in two instalments. For the whole course of hospital instruction for the B.D.S. degree (including mechanical training), £168, paid in instalments. In accordance with the new regulations, L.D.S. students who have taken two years' training in practical Dental Mechanics with a registered practitioner are required to take a further year in the Hospital mechanical laboratory, the fee for this being £63. All the courses of instruction are open to women students. Copies of the Prospectus will be forwarded on application to Mr. J. Hilditch Mathews, Dean.

Newcastle-upon-Tyne Dental Hospital and School.—This hospital is centrally situated (within five minutes of the various colleges, infirmary, and railway station); the rooms are well lighted and thoroughly equipped for carrying on the work. Dental surgeons and an anæsthetist attend each morning. A tutorial dental surgeon and a prosthetic tutor is also in attendance. The Composition Fee for the special Dental Lectures and Dental Hospital Practice is £60 4s. if paid in one sum, or £62 6s. if paid in two instalments of £31 3s. The Composition Fee for the Lectures at the Colleges of Medicine and Science is £67 10s.; in addition to this there is a library and an athletic club fee. The fee for General Hospital Practice at the Royal Victoria Infirmary, Newcastle-upon-Tyne, is £23 2s. Medals and Certificates of Merit are granted to students showing certain standards of proficiency in the various classes at the Dental School. The prospectus of the Dental Hospital and School, containing full information, may be obtained from Mr. James Coltman, 13, Ellison-place, Newcastle-upon-Tyne, Dean.

Devon and Exeter Dental Hospital, 24, Southernhay West, Exeter.—Established 1880.—The hospital is open on Mondays, Tuesdays, Wednesdays, Thursdays, Fridays, and Saturdays, and patients are admitted between the hours of 9.30 and 11 A.M. Students attend the practice of the hospital under the control of the medical officers. Honorary treasurer, Mr. J. M. Ackland; secretary, Mr. Albert G. Littlejohn.

SCOTLAND.

The Incorporated Edinburgh Dental Hospital and School.—The Edinburgh Dental Hospital and School is located in spacious and well-equipped buildings at 30, 31, and 32, Chambers-street, and offers special advantages to dental students. A large and important extension of the existing buildings is now in process of construction. The General Courses required for the Dental Diploma may be taken in the Medical School of the Royal Colleges of Physicians and Surgeons or in the University schools. The general hospital attendance and clinical instruction are taken at the Royal Infirmary. The University, Medical Schools, and Royal Infirmary are within three minutes' walk of the Dental Hospital. The special courses are taken in the hospital. The Dental Hospital practice, extending over two years, affords a student ample opportunity for a full acquaintance with every branch of dentistry. The hospital admits a limited number of indentured pupils. They receive their instruction in Mechanical Dentistry concurrently with the general and special courses. A premium of 60 guineas is payable with each such pupil. The practice and lectures of the hospital are recognised by, and qualify for, all the Licensing Boards. The cost of the hospital outfit of instruments is included in the Dental Hospital fee of £42. The minimum cost of classes and Diploma for the whole course of dental instruction amounts to £123. Those students who desire to take a Medical and Surgical Diploma in addition to the L.D.S. have in this school admirable facilities for so doing. The triple qualification of the Royal College of Physicians and Surgeons of Edinburgh and the Royal Faculty of Physicians and Surgeons of Glasgow is recommended. The minimum cost of Professional Education, the Triple Qualification, and the Licence in Dental Surgery amounts to £202 8s. 6d. The Higher Dental Diploma (H.D.D.) of the Royal College of Surgeons affords an opportunity of obtaining a higher qualification subsequent to registration. The Prospectus, with full information, may be obtained by application to the Dean or the Assistant Secretary.

Incorporated Glasgow Dental Hospital, 158, Renfrew-street and 15, Dalhousie-street, Glasgow.—The School is open to Men and Women Students, and Lectures are given on Dental Surgery, Operative Dental Surgery, Orthodontia, Dental Anatomy and Physiology, Dental Histology, Dental Mechanics, Crown and Bridge work, Dental Metallurgy, Dental Bacteriology, Radiology, Anæsthetics, and Dental Materia Medica. Lectures on general subjects required for Dentistry may be taken at the University or at one of the extra-mural schools where special provision is made for Dental Students. Composition fee for two years' Hospital Practice and Lectures special to Dentistry, £60 on entry, or in two instalments of £35 and £30. A new mechanical laboratory with bench accommodation for 60 pupils and fully equipped with the most modern appliances for teaching practical dental mechanics has recently been added. Fee for two years' tuition, £63, or in two instalments. Full information may be had on application to the Dean.

Glasgow Royal Infirmary (Dental Department).—Mr. W. R. Taylor attends at the Royal Infirmary at 9 A.M. on Wednesdays and other days as arranged. The following course in the curriculum can be taken at St. Mungo's College: Anatomy, six months; Practical Anatomy, nine months; Physiology, six months; Chemistry, six months; Practical Chemistry, three months; Surgery, six months; Medicine, six months; Materia Medica, three months; Clinical Surgery, six months; Dental Surgery, six months, and attendance for two years on the dental department of the hospital.

IRELAND.

Incorporated Dental Hospital of Ireland, Lincoln-place, Dublin.—All Dental Students who have passed their First Dental Examination in the Royal College of Surgeons in Ireland (or an equivalent examination or examinations) are admissible to the Clinical Instruction of the Hospital. In addition to Clinical Instruction and Special Demonstrations, courses of lectures are given at the hospital on Dental Surgery and Pathology, Mechanical Dentistry, the Administration of Anæsthetics, Orthodontia, Dental Anatomy, and Dental Materia Medica, and instruction in Anæsthetics. Fees: Hospital Practice (each year), £18 18s.; Lectures, £5 5s. The course in practical Dental Mechanics can be taken in the Hospital Laboratory. Further particulars can be obtained from the Dean.

CIGARETTE CARDS FOR HOSPITALS.—Mr. George Giddings, of Coldharbour-lane, Camberwell, who has been paralysed since childhood, has collected cigarette cards to the number, he estimates, of millions. He began doing so as a hobby, but eventually let it be known that he was prepared to amass and sell cards to complete collections, the proceeds to go the Red Cross during the war. Since 1919 he has continued the work on behalf of King's College Hospital, where he supports a cot. Altogether he has contributed nearly £1000 to the Red Cross and the hospital. None of the cards are bought; they are all sent to Mr. Giddings by people who have heard of what he is doing, and he receives them in such large numbers that he is always able to complete imperfect collections.

THE LANCET.

LONDON: SATURDAY, OCTOBER 9, 1926.

THE MEDICAL LIFE.

MANY aspects of the medical life were presented by professional leaders last week to the students assembled at the various teaching schools for the opening of the winter session, and those which we publish to-day in abridgment may all be said to deliver the common message that the medical life is a full and fine one, calling for the exercise of high practical as well as scientific qualities, and affording opportunities for the exercise of these qualities in many varied forms. For the students at King's College Hospital this last point was made the subject of the introductory address, in which Sir HUMPHRY ROLLESTON reviewed the various careers of practitioners, contrasting their financial rewards with those which were obtained, for example, by barristers, and indicating once again the obvious fact that the general practitioner is, and must be, the backbone of the profession. Wisely he commenced his address with a warning against too early specialisation as he set before his audience a picture of the diverse careers that entry of the medical ranks offers, while he outlined the direction in which development and evolution were occurring.

A survey of the medical profession at once reveals the varied opportunities that the medical life holds out to men of different bents of mind. The general practitioner, the consulting physician, the operating surgeon, the holder of purely scientific appointments, the officer in Government and municipal employ, the medical manager of institutions, the medical officer in the Services, lead careers which differ entirely, though the reason for their working lives—the prevention and remedy of disease—is common to all. For some life will be essentially adventurous; for others it will be spent in two or three wards, an operating theatre, and a consulting-room. Some will be the trusted friends of the great; socially, many exclusive doors will be open to them and intercourse with intellectual leaders of all sorts will be their right: others will serve under authorities and municipalities composed of men whose education and position may not be equal to their own, even while the wide extension of public culture is allowed for; and some will live in daily and intimate intercourse with the poor. The man who loves the study of his fellows has social and psychological problems unrolled before him from hour to hour—he sees naked souls as well as naked bodies, and has to take the treatment of both into his consideration. No special application of psychological knowledge can alter the position that the sound doctor must be to a great extent, and always, a sound psychologist; and every general practitioner knows this so well that he seldom alludes to its obviousness. He whose sympathies are rather with the theory than with the practice of his art can exert his energies in the class-room or laboratory without coming into collision with the public. The sportsman can indulge his proclivities in moderation whilst discharging his professional duties with zeal, though small will be his chances of success if the zeal is manifested too much over the sport and the moderation is applied to his appetite for his duties. All sorts of persons in all sorts of methods and under all sorts of skies can carry on the profession of medicine, so that there need not be many to whom the medical life is irksome, though there must be few for whom it is not arduous. There will be an unfortunate minority, who, being by Nature designed for work of one kind, have by stress of circumstances been forced into a different groove. Probably they did not discover their own tastes until it was too late to work in the necessary direction, and this error is a very difficult one to rectify, whatever calling a man may adopt. But, speaking generally, the profession of medicine has this first advantage for its British disciples—an advantage which members of other nations do not enjoy—it offers a career that can be varied to suit all inclinations. Further, a high percentage of the followers of medicine attain to a fair degree of success, and the total failures are comparatively infrequent. These things must always be remembered, for while certain circumstances may be held to detract from the medical life—the tyranny of many of its conditions, for example, and the strain of many of its conjunctures—they establish it as a good life, offering chances to a man with brains and energies, a large choice in the sphere of labour, and to a fitting extent an opening for individuality, even while obeying the restrictions entailed by the world.

That the medical life, despite its common objective remaining ever the same, will be changing perpetually as knowledge of medicine progresses, was the message of Sir ARCHIBALD GARROD to the students at Westminster Hospital. He pointed out that with the development of clinical medicine, which has been so striking a feature throughout the last 50 years, there has come for the doctor of to-day numerous alternatives in professional life which did not exist for his immediate forerunners. The student of 50 years ago had to regard his studies as leading up to one of three or four methods of making a livelihood. Pathology was synonymous with morbid anatomy, and of those scientific developments in medicine, which are the pride of our time, the foundations were only being laid, largely by medical men in the intervals of practice. There were no bacteriologists and the whole of the biochemist's story remained to be told. But the vitality of medicine is here illustrated excellently by the fact that, as the separate branches of the medical life have become more differentiated, intensive study along the various lines continues to reveal gaps in our knowledge previously undetected, affording boundless opportunities for research. Here the words of Sir WALTER FLETCHER at the opening of the session of the London School of Medicine for Women are exactly apposite. "It is not very bold," he said, "to think that the physician is likely to find his powers and scope changing rapidly in many ways as we lay hold of the elements of a scientific knowledge of nutrition and begin to use its enormous latent powers." Everyone who tries to keep abreast with the literature of our calling will have noted the increasing authority with which it is possible to speak on the manifold problems of nutrition, and will also have noted the many places where theories require confirmation and statements ask for support, both of which will have to come from the men and women who are doing the clinical work. "The practical doctor has greater opportunities to carry on investigations bearing directly on the treatment of disease than the laboratory worker," said Prof. THOMAS YEATES to the Middlesex Hospital students, and this an inspiring thought for all, gains force from the high position of clinical teaching in this country,

Dr. GRAHAM LITTLE, in his address to the students at St. George's Hospital, the provocative nature of which he has since admitted to have been intentional, mentioned the insistence which has been laid always in British schools upon the importance of clinical training. Our men are thus fitted, while discharging the duties of practice, to collect and collate those clinical facts upon which science depends in its march, and at any occasion where medical training is the subject of oratory or debate, it is well that this gratifying fact should be insisted upon. The high clinical level of the general body is the guarantee that our medicine is sound and moving forward.

WELFARE OF THE BLIND.

THE sixth report of the Advisory Committee on the Welfare of the Blind to the Ministry of Health [1] records the advances of the last two years. As many as 90 per cent. of the blind population over 50 years of age are now receiving the old-age pension, the remaining 10 per cent. being presumably in the possession of other means. The expenditure of local authorities in connexion with the Blind Persons Act has risen from £14,671 in 1921–22 to £127,593 in 1925–26, and it is satisfactory to know that in spite of this the income of voluntary agencies from subscriptions and donations has risen to over £400,000 in 1923–24. These sums are supplemented by grants from the Ministry of Health to an amount which now exceeds £100,000, the greater part of which money consists in grants made for employment purposes to workshops and home workers, but a substantial part of which goes to the provision of "home teaching" to blind persons classed as "unemployable."

The total number of the blind population of England and Wales in 1925 was said to be 42,140, but we think that in one respect the statistics are incomplete. The table showing the distribution of blindness according to age-periods shows 0·6 per cent. under 5 years old, whereas in the table showing the ages at which blindness was acquired it appears that about one-fifth became blind within the first year of life (a fact due partly to congenital blindness and partly to ophthalmia neonatorum). Is it that a considerable proportion of children under school age escape registration? On the other hand, the dividing line between "blind" and "not blind" is not easy to draw, and a recent circular of the Ministry of Health draws attention to the varying standards which have been adopted. The definition "too blind to perform work for which eyesight is essential," which is found in the Ministry's regulations is obviously quite vague for the purposes of statistics. Out of a total of 39,163 blind persons over the age of 16, only 8840 were actually employed, but it is satisfactory to find that the number under training increased between 1923 and 1925 from 1246 to 1621. Of the 26,826 blind classed as "unemployable" a few have private means, and some are married women occupied with domestic duties, but the great bulk, the report states, are definitely incapable of performing any work of an economic worth. For their benefit each local authority in consultation with voluntary agencies, and with the sanction of the Ministry of Health, has drawn up schemes of assistance, both social and financial, the income being generally made up to 25*s*. a week or higher. In the case of the employed blind the earnings are generally supplemented on a sliding scale, and with a view to the promotion of a greater degree of uniformity a definite scale of augmentation is recommended by the Ministry as a general national minimum.

The report contains some reference to partially blind children for whom the total accommodation at present available in myope schools and myope classes is sadly deficient. We would call special attention to the warning "that any restriction at the present time in the development of sight conservation classes would be a very regrettable, and in the long run, an uneconomical measure." The hope is expressed "that it will be possible for the Board to proceed with their full programme for the development of extended facilities for the education of this class." More consideration is needed to help parents in a choice of career for their children with weak sight, whether due to myopia or to some other cause, and the case of that considerable class of adults who become weak-sighted in later life without being so blind as to qualify for State assistance might well be commended to voluntary effort.

[1] H.M. Stationery Office. Pp. 32. 9*d*.

IRRADIATION AND CELL-DIVISION.

THE therapeutic value of X rays and radium is based on the fact that certain tissues, of which cancerous tissue is one, are more sensitive than others to the destructive action of these radiations. Of normal tissues the lymphoid tissue and the testis are particularly sensitive to irradiation, and this selective action goes even so far as to distinguish between different cells of the testis; the cells of Sertoli are much more resistant to radiation than the cells engaged in spermatogenesis, and the interstitial cells may even hypertrophy when the seminiferous tubules atrophy after irradiation. Since all the tissues which are specially sensitive to irradiation are growing tissues in which active cell-division is going on, it has been assumed in explanation of the selective action of irradiation that cells in the process of mitosis are particularly sensitive. This view is expressed in what is called the law of Bergonié and Tribondeau, which may be formulated as follows: "Immature cells and cells in an active state of division are more sensitive to irradiation than are cells which have already acquired their fixed adult morphological or physiological character."

Several recent publications throw doubt on the correctness of this explanation. STRANGEWAYS and his collaborators [1] have studied the effect of exposure to X rays on cells cultivated in vitro, using choroid cells of the embryo chick as the test object. They found a distinct diminution in the number of cells in mitosis if the irradiated cultures were examined after having been incubated for 80 minutes after exposure. This effect was obtained even with very small doses of X rays, so that the authors are inclined to look upon it as a particularly delicate test of biological response to irradiation. No stimulating effect was obtained even with the smallest doses. With increasing dosage the effect became more and more marked, so that with the largest dose given there was a complete cessation of mitosis. By direct observation under the microscope on the warm stage the surprising result was obtained that the cells which were already in some stage of mitosis—even the earliest prophase—before irradiation began, passed through the remaining phases of cell-division and gave rise to two daughter cells. The inhibition of cell-division is therefore not due to injury or disintegration of cells

[1] T. S. P. Strangeways and H. E. M. Oakeley: Proc. Roy. Soc. B., 1923, xcv., 373. Strangeways and F. L. Hopwood: Ibid., 1926, c., 283.

actually passing through the process of mitosis. It must therefore be due to an inhibitory effect on the resting (i.e., non-dividing) cells whereby these are prevented from entering into the process of mitosis. From this inhibition the cells can recover if only small doses of X rays have been applied. The cells begin to divide again normally after five hours and the irradiated in vitro culture can be successfully subcultured an indefinite number of times. With larger doses, however, the mitoses which appear are abnormal and the cells disintegrate. STRANGEWAYS and HOPWOOD state categorically that "cells undergoing mitosis are unaffected by X radiation," apparently basing their statement on the observation that exposure of dividing cells to doses so large as to produce permanent damage if applied to non-dividing cells does not prevent dividing cells from completing mitosis and giving rise to two daughter cells. But the possibility remains that the subsequent history of the daughter cells may afford evidence of some permanent injury, and the paper does not contain any observations which would exclude this. It would certainly be remarkable if the process of mitosis should render an otherwise sensitive cell completely resistant to irradiation.

Strikingly similar results have been obtained by J. C. MOTTRAM, G. M. SCOTT, and S. RUSS[2] from a study of the effect of beta rays from radium upon the cells of a transplantable rat sarcoma. After radium had been applied over the tumour a piece of it was removed and the number of mitoses in a radiated and a non-radiated tumour compared by means of stained sections. An hour after exposure an almost complete absence of mitosis was noted in the irradiated tumour, although at the time of exposure numerous cells could be seen in mitosis. After a period varying with the size of the dose there was a return of cells showing mitosis, even when doses had been given so large that, applied to the tumour in vitro, the cells on transplantation would have been unable to produce a new tumour. They explain these curiously paradoxical phenomena in the light of STRANGEWAY'S work as being due to an inhibition of the cells from entering into the phase of mitosis, the process of mitosis itself being unaffected by irradiation. These observations raise a number of interesting problems. It is obvious that we must discard the old explanation which attributes the special sensitiveness to irradiation of growing tissues to the presence of cells in the phase of mitosis. Although cytologically the resting cells of a growing tissue are not different from the cells of a non-growing tissue, these observations show that they differ biologically in their sensitiveness to irradiation. Such sensitiveness must be due to some property which the cells of all growing tissues have in common and which is presumably connected with the process of growth. Since this applies to normal growing cells as well as to cancer cells, it would appear that the mechanism of growth is essentially the same in both.

[2] Proc. Roy. Soc. B., 1926, c., 326.

ST. LUKE'S DAY.—There will be a special service at St. Martin's Church, Trafalgar-square, W.C., on the evening of Monday, Oct. 18th. To this service, which commences at 7.45 P.M., all members of the medical and nursing professions will be welcome. The service will take the form of thanksgiving for health and a prayer for the sick and suffering, and the preacher will be Dr. Arthur Lankester. Dr. Lankester went out to India in 1891 and was stationed at the Church Missionary Society's Hospital at Amritsar. Subsequently he took charge of the hospital at Peshawar, N.W. Frontier. He has been decorated for public services in India and his research work in connexion with tuberculosis.

Annotations.

"Ne quid nimis."

COAL AND HOSPITALS.

THE long continuance of the coal strike and the rapid approach of the time when the sun can no longer be depended upon to warm wards and offices is causing serious anxiety to the authorities of most of the hospitals in the country. For two or three days in the early part of last week there was a foretaste of what cold weather means to patients and staff when fuel is scarce and the warming of great spaces is inefficient or impossible. In a private house where everyone is in normal health cold rooms for a day or two may be no more than a very annoying inconvenience, but in a hospital cold wards, besides adding to the difficulties of staff work of all kinds, may be a real danger to patients. So long as coal can be found to run railway services, which are but little curtailed, it is impossible to find any excuse for starving the hospitals, more especially since the production of English coal increases daily. Yet the danger of this deprivation unquestionably exists. At the best stocks of fuel are low and much of that which is obtained currently from abroad is of small calorific value, and consequently even more expensive than its inflated price attests. Many hospitals, in fact, have no stocks at all, and some are experiencing difficulty in obtaining week-to-week supplies. The Royal Infirmary at Edinburgh, for instance, which has close upon 1000 beds, finds that the foreign coal which it has been using is no longer obtainable and the supplies in hand will last little more than three weeks. Failing replenishment of the cellars it may be necessary to close wards, but an official warning to this effect has already produced some handsome offers. This may be an extreme case, since the principal hospitals of Cardiff, Manchester, and Birmingham have none of them had any real difficulty in getting coal, though it has been more expensive and in some cases of poor quality. But the general outlook is not reassuring. In London, so far, difficulties have been surmounted with fair success, and it is satisfactory to know that at the London Hospital, the largest of the metropolitan institutions, the position is much less alarming than would appear from erroneous statements in daily newspapers. Its demands are necessarily large—150 tons of fuel are required every week of which 130 are consumed by central heating—but supplies are coming in freely, the central controlling authorities having given all possible help. At St. Bartholomew's a long stoppage was anticipated and careful preparations were early made to meet the difficulties that were foreseen. Much larger stocks were laid in than is usual at that period of the year, but they are now rapidly diminishing, and a few days of really cold weather would deplete them very seriously. The existing supplies, consisting largely of foreign coal, may last for five or six weeks, but the governors are anxiously considering methods of replenishment against the days, now not far distant, when the full winter consumption will have to be provided for. Guy's Hospital generates its own electricity, and its fuel requirements are consequently large. It has no stocks to fall back upon, but current supplies have, so far, been sufficient for all purposes. Middlesex Hospital is fortunate enough to have fairly large stocks still in hand, and is able to keep its central heating system fully at work. There is consequently little cause for anxiety so long as the mild weather continues. St. George's, on the other hand, has no reserves and only foreign coal can be obtained. Both house and steam coal are costing 77*s.* per ton, and between £120 and £130 a week beyond the normal is being spent on fuel. Stocks at King's College Hospital have run very low, but what may be called domestic supplies are still being received in sufficient quantity. The most serious difficulty arises in relation to the central heating and

electric services for which fuel can no longer be obtained in adequate quantity. This hospital also generates its own electricity for all purposes, including the very important ones of massage and X ray work. The activities of these departments are consequently threatened, though they have so far not actually been interfered with. Owing to inadequate heating during the cold snap of the early part of last week, the children's wards were so much cooled that all the cots had to be placed as near as possible to open fires. Westminster Hospital's stocks were exhausted a short time ago, and it is now dependent upon its weekly allowance. That allowance has not been reduced so far as the hospital itself is concerned, but the medical school and the nurses' home are severely restricted. St. Thomas's, which uses oil fuel, is unaffected. Charing Cross burns coke only for its central heating, and is just able to manage, though full supplies are unattainable.

The troubles of the hospitals in consequence of the strike are obviously not confined to the difficulty of obtaining fuel. There are serious economic results also. Not only are coal and coke at more than famine prices, but such services as gas, electricity, and water are costing or soon will cost more. This means a heavy increase in current expenditure in directions where it is hardly possible to economise appreciably. Moreover, in many cases income has fallen heavily, especially in places where contributory schemes are in operation. Cessation of wages implies cessation of the workman's 1*d.* in the £, and his employer's supplementary payment. The voluntary hospitals are thus more than ever dependent upon the general prosperity of the country. Money will no doubt be found somehow to pay for fuel, the cost of which is not only excessive but is suspected of being unjustifiable. But the difficulty of obtaining heating material may yet be greater than that of raising money, hard as that is. Clearly the matter cannot be left at hazard. Power and light are among the first essentials for the continuance of hospital work, and precautions must be taken against that work being interfered with whilst fuel is available for less important services.

MEASUREMENT OF MOVEMENT IN JOINTS.

IT has been said with some truth that science is measurement, and if surgery aspires to rise above the status of handicraft implied by the etymology of its name it must resort to the use of instruments of precision. The necessity for this has been felt by a number of surgeons, and there is no lack of elaborately constructed instruments for the exact measurement of the deformities with which the human body may be afflicted. Unfortunately the data, the fixed points from which measurements are made, are in general ill-defined. If it is difficult in the bare skeleton to mark out the exact axis of one of the long bones, it is still more difficult to do so in the living body, when the observer is separated from his data by often voluminous soft parts. For these reasons it has seemed to us that elaborate and delicate instruments are unnecessary, for measurements can only be approximate and there must be a wide margin of error allowed. Prof. A. P. Ashhurst, of Philadelphia, has recently published a paper [1] on the Motions of the Larger Joints, which is not, as might be supposed, a dissertation on the mechanism and action of joints, but on a less ambitious scale it is an attempt to lay down some rules for the measurement of the range of motion in these joints in health and disease. Although he does not describe his apparatus, we are able to gather from the illustrations and the text that Prof. Ashhurst employs generally a simple goniometer. The carpenter's 2-foot rule with angle-plate, which is sold by all tool-dealers, is the simplest form of this, and has been found quite accurate enough by some surgeons in this country. The only other instrument mentioned in the article is a "pronometer." This has nothing to do with pronouns and grammar, but appears to be an instrument intended to register the rotary movement of the forearm, including, of course, supination as well as pronation. As there is no description of this machine and the illustrations do not show its construction, the reader is unable to judge of its efficacy a priori or to test it for himself. Measurements of the angle formed between two long bones, such as the femur and the tibia when the knee is bent, is comparatively easy, but when we come to deal with a joint of which one component is an irregularly shaped mass such as the os innominatum or the shoulder-blade, the difficulty of defining the axis of either of the latter is very great. Prof. Ashhurst makes no attempt at instrumental mensuration in these two cases, but relies upon a rough estimate by the eye alone, after pointing out the fallacies which should be avoided. As far as it goes this article may be useful, for it is a good thing to reiterate truths and illustrate them by clear diagrammatic drawings, although they may be commonplaces to orthopædic surgeons.

[1] International Clinics, 1926. Thirty-sixth series. Vol. I., p. 74. London: J. B. Lippincott Company. Price per four volumes, 50*s.*

THE ACTION OF EMETINE IN AMŒBIC DYSENTERY.

SINCE W. C. Boeck and J. Drbohlav [1] showed that it is comparatively easy to cultivate *Entamœba histolytica* in test-tubes, the scope of clinical and epidemiological investigation of amœbiasis has been much enlarged and the experimental situation has completely changed. J. H. St. John [2] has recently shown the value of cultural methods in the diagnosis of doubtful cases and other workers have thrown new light on the incidence of amœbiasis in man. It has often been observed that in temperate zones there are large numbers of carriers of *E. histolytica* who have no symptoms, and it is said that there are nearly 2 million cyst-passers in England; yet only one or two autochthonous cases of amœbic dysentery are reported each year, and the question is often asked why the entamœba should cause dysentery amongst infested persons in the tropics but not amongst those in temperate zones. E. Brumpt [3] has used cultural methods to investigate a new species, *Entamœba dispar*, described by him in 1925, and suggests that the widespread four-nucleated-cyst amœba is wrongly regarded as *histolytica*. It should, he thinks, be classified as *E. dispar*, and is perhaps not pathogenic at all.

Whilst morphological investigations are of interest, the value of cultural methods is equally apparent when it comes to testing the value of amœbicidal drugs. It is accepted that emetine is a specific therapeutic agent in amœbic dysentery, and clinically it is found that emetine and cephaeline are the only alkaloids of ipecacuanha which have curative properties in this disease. Experiments on their action in vitro, however, have by no means borne out this clinical fact, and to explain the discrepancy it has been suggested that emetine does not act directly on the parasites and that the host plays a large part in the cure. In an important paper published recently C. Dobell and P. P. Laidlaw [4] attribute the divergence of results to the inherent error of comparing in vitro experiments, lasting only a few hours, with a therapeutic action spread over many days. They have now studied the action of ipecacuanha alkaloids on *E. histolytica* in culture and were able to improve on the original method of Boeck and Drbohlav and to get rich cultures of amœbæ, growing with great regularity. They could thus expose the amœbæ to various concentrations of ipecacuanha alkaloids for as long as was desired, at the same time being sure that their control cultures, without alkaloid, would multiply throughout the

[1] American Journal of Hygiene, 1925, cccixxi.
[2] Journal of American Medical Association, 1926, lxxxvi., No. 17.
[3] Bulletin Médical, 1926, xl., No. 5.
[4] Parasitology, June, 1926.

course of the experiments. Culture tubes inoculated with the amœba were incubated at 37° C. for two to three days, and results at the end of 48 hours were usually decisive. Earlier examinations gave misleading results. The experiments made it clear that 1/50,000 is the highest concentration of emetine that *E. histolytica* will tolerate for more than a short time. The amœbæ might live and move actively for many hours in 1/1000 concentration of emetine, but they did not multiply and the cultures soon died out. In 1/200,000 they grew well and multiplied as actively as in the control tubes. The threshold value of emetine was therefore 1/50,000 dilution. Cephaeline was found to be definitely more toxic than emetine for *E. histolytica*, but the other ipecacuanha alkaloids and derivatives, in concentrations lower than 1/1000, invariably gave cultures as rich as the controls. Quinine, tested by this new technique, in concentration lower than 1/1000, also gave cultures of *histolytica* as rich as in the controls. Stovarsol was found to be without effect in dilution of 1/20,000 or less, but had a slow poisonous action in stronger solutions; emetine, under these experimental conditions, is thus shown to be ten times more toxic than stovarsol for this amœba. Similar culture-test comparisons showed that, in vitro, emetine and cephaeline were 50 times more toxic to *E. histolytica* than were any of the other ipecacuanha alkaloids. There thus appears to be a close parallel between the actions of the various ipecacuanha alkaloids on cultures of *E. histolytica* in vitro and their several therapeutic effects in human infections with that amœba. Dobell and Laidlaw consider that their experiments show that doses of emetine and other alkaloids needed to kill *E. histolytica* immediately bear no apparent relation to the minimal doses of the same substances which are eventually lethal if maintained for a period of days. Exactly how weak solutions of emetine act on *E. histolytica* is hard to determine. The poisoning process—whatever it be—is slow, the alkaloid operating and producing its ultimate effect in a concentration far below that required to kill the parasites immediately. A very small amount of emetine, if constantly present in the intestine for days or weeks, would probably suffice to make life therein impossible for *E. histolytica*, though not for *E. coli*. Some human beings infected with *histolytica* appear to be incurable by emetine, however administered, and to explain this the existence of emetine-resistant strains of the parasite has been postulated. Dobell and Laidlaw, however, found it impossible experimentally to obtain or produce a strain of *histolytica* resistant to emetine, and suggest that these cases may be incurable because, like the cat, these individuals excrete the drug rapidly in the urine, so that little or none of it reaches the colon. Comparative analyses of urine in different cases would settle the matter. They conclude finally that the curative effects of emetine in human amœbic dysentery are best explained as a result of the direct lethal action of the alkaloid on *E. histolytica*.

The authors are to be congratulated on a valuable investigation. Their results have a wide application, for, as with amœbæ so with trypanosomes and spirochætes, it is clearly not sufficient to expose parasites to a given drug for a few minutes or a few hours, or to ascertain what concentration of the drug is instantaneously fatal. Before the possibility of direct action can be excluded, the effects of prolonged exposure to concentrations which do not kill immediately must be determined. The clinician will note, however, that these are conclusions based mainly on results of in vitro experiments and that a highly organic medium (horse serum and egg-white) was in fact incubated with the drug tested. He will think of the apparently magic—because very rapid—result of one or two gr. i. injections of emetine in severe cases of amœbic dysentery, and question if in so short a time and with so few doses a concentration of emetine greater than 1/50,000 has appeared in the colon. If no higher concentration is reached, then the direct action of emetine on the parasites in the intestine must be far more rapid than in the experimenter's test-tube.

Many interesting papers on amœbiasis, including some of those to which we have referred, are well summarised in the current *Tropical Diseases Bulletin* (September, 1926).

BATHING AND AURAL DISEASE.

THE bathing season just over has produced the usual crop of trouble in the ears of bathers; and it may be useful to examine briefly the causation and possible prevention of aural diseases due to bathing while their occurrence is still fresh in the minds of practitioners. Water can reach the ear and produce harmful effects either through the external auditory meatus or by way of the Eustachian tube. Water getting into the external ear produces a disagreeable sensation, as everybody knows from experience, but quickly runs out again from a clean and healthy meatus and, ordinarily, produces no further trouble. If, however, the ear contains much cerumen, this imbibes the moisture, swells up and blocks the canal; "water in the ear" which persists long enough for advice to be sought is nearly always due to cerumen and can usually be cured by its removal. The pressure of the swollen wax and the retention of moisture readily produce a dermatitis of the canal, and this is the usual cause of an external otitis in bathers; those with excessive secretion of cerumen should have it removed before their seaside holiday. In addition, people who have a tendency to eczema of the meatus often suffer an exacerbation of their trouble if they allow water to get into the ears, and whilst to some salt water seems to be more irritating than fresh, the water of public swimming-baths is apt to be heavily infected with micro-organisms. Unskilful diving from a height may cause rupture of the drum by mechanical force; but in general it can be said that the occasional entry of water into a healthy meatus is harmless, as is evident from the comparative rarity of trouble among innumerable bathers. All the same, as Mr. Walter Edmunds pointed out some time ago,[1] mammals, such as the water-shrew and seal, which have reverted to an aquatic existence, possess a mechanism for closing the meatus, the seal being also able to close its nostrils when submerged. The commonest cause of serious ear-disease from bathing is the entrance of water into an old, often dry and quiescent, perforation of the drum; and this may produce a very severe suppuration with all its attendant complications. Patients with a perforated drum should never be allowed to bathe without a completely efficient means of preventing the entry of water into the ear. Ordinary cotton-wool is useless; sheep's wool, being greasy and not hygroscopic, is better; a properly fitting rubber plug coated with vaseline is fairly reliable, but most satisfactory of all is a plugging material made of wax or plasticine mixed with fibre, which may be had from several instrument makers. A rubber bathing cap with ear-flaps should be worn over any plug. There remains, however, the second route of infection. People may develop otitis media after bathing though their drums and canals are perfectly healthy, and this is due to the entrance of water into the tympanum through the Eustachian tube, the inflammation varying from a mild tubal catarrh to severe otitis and mastoiditis. The chief factors which favour entry of water into the tubes are violent blowing of the nose after swimming, and swallowing whilst under water. Dr. George B. McAuliffe, of New York,[2] recently sent out a questionnaire to a number of prominent amateur swimmers of the New York Athletic Club, in an attempt to elicit why it is that this accident only occasionally happens, and how it is that water gets into the ears. He got replies from 12 swimmers of from 5 to 39 years' experience, and the answers were very various; only one thought diving injurious,

[1] THE LANCET, 1924, i., 1081.
[2] Medical Journal and Record, Sept. 15th, 1926.

and two of the three who blow the nose after emerging had had ear inflammations. There was an impression that salt water was more injurious than fresh, probably because it encouraged nasal secretion and blowing of the nose. Dr. McAuliffe's conclusions seem sound—namely, that in a healthy ear the use of plugs are unnecessary; that the only time that a plug is needed is when there is an open perforation or when the skin of the canal is irritated by the water; that bathers should not swallow while swimming, and that they should let the water drain from the nose and avoid blowing on coming out of the water. If blowing the nose and swallowing are avoided, no ear complication will occur.

THE ROYAL COLLEGE OF PHYSICIANS OF IRELAND.

SINCE the establishment of the Irish Free State many of the chartered corporations in Ireland have found that their charters have become in some points defective. The Royal College of Physicians, for example, has found itself without visitors, since the public officials designated in its charters no longer exist. A more serious disability has been the suspension of its power to make new, or alter old, by-laws. For a by-law of the College to become effective it had to receive the approval of the Lord Lieutenant in Council. The Lord Lieutenants to the Privy Council disappeared when the Free State came into being, and while some of their powers were transferred to other bodies, in regard to others no such arrangement was made. The result, as far as the College of Physicians was concerned, was that there was no machinery by which it could make or amend by-laws, and several intended amendments have been held up for some years past. An Act for the amendment of charters passed the Oireachtas, however, a few months ago, which remedied this defect, and suitable action has now been taken. The Minister for Justice, as empowered by the Act, has issued an Order making the necessary amendments in the Charter of the College. The Chief Justice and the President of the High Court of the Irish Free State are nominated as visitors, and the Minister for Justice is himself constituted the approving authority for by-laws in place of the Lord Lieutenant in Council. In future, therefore, the College will be free, with the approval of the Minister, to make such by-laws as it thinks fit. The first change, which has already passed the College, will be to widen the scope of the examination for membership.

ENCEPHALO-MYELITIS FOLLOWING VACCINATION.

WHEN reviewing recently [1] a series of cases of encephalo-myelitis in which, according to Prof. H. M. Turnbull and Prof. James McIntosh, vaccination was a definite causal factor, we had occasion to refer to cases occurring in Holland during 1925. Further allusion to these cases appears [2] in an article by Dr. F. S. van Bouwdyk Bastianse, of The Hague, in its clinical and histological aspects in collaboration with Dr. J. P. Bijl, of Utrecht, who records his experiments on animals. Dr. T. T. Terburgh, of The Hague, supplies the epidemiological data. Their observations are based on their experience in Holland where from Jan. 1st, 1924, to July 1st, 1925, 35 cases, of which 15 were fatal, occurred of encephalitis following vaccination after an interval usually of 10 to 13 days. The cases were chiefly met with in small communes, sometimes closely adjacent to one another, and more than one case was often observed at one time in the same commune. Most of the cases were notified in March, when epidemic encephalitis was more prevalent than in the other months of the year. The vaccine used for the children who developed encephalitis came from three different institutions, and 12 calves served to provide the lymph. Dr. Terburgh found that encephalitis could be produced by inoculating the brains of rabbits with vaccine lymph and that in the brains of these animals a virus could be demonstrated which was apparently identical with Levaditi's neuro-vaccine. No infective agent could be found in the cerebro-spinal fluid of the affected children during life or after death. The writers' conclusions are as follows: 1. It is impossible to deny a connexion between vaccination and the encephalitis which follows it. 2. Post-vaccinal encephalitis is probably caused by an ultra-virus. 3. It is very improbable that post-vaccinal encephalitis is caused by the direct or exclusive action of vaccine lymph—there must be some unknown contributory factor. 4. It is most likely that the process of vaccination has given rise to the activation of a latent virus. 5. The supposition that this virus is the virus of epidemic encephalitis or one closely related to it offers the readiest explanation of the clinical and histological picture as well as of the epidemiological facts. The proof of the last two conclusions, however, is not yet forthcoming, and we are more inclined to accept the views of Turnbull and McIntosh.

[1] THE LANCET, Sept. 4th, p. 504.
[2] Nederlandsch Tijdschrift voor Geneeskunde, Sept. 18th, 1926.

PROFESSOR SCHMIEGELOW.

Dr. Ernst Schmiegelow, of Copenhagen, celebrates his seventieth birthday on Oct. 13th, when he retires from active service as chief of the Oto-laryngological Clinic at the Rigshospital. His friends in many countries are marking the occasion by presenting to the clinic a medallion portrait in bronze of their professor. The Royal Society of Medicine will be represented by Sir StClair Thomson, a past-president of that body, who will contribute a communication at a meeting of the Danish Oto-laryngological Society, to be held on Oct. 12th. Addresses will also be given by Prof. H. Burger (Amsterdam) and Prof. Carl von Eicken (Berlin), and other European leaders propose to unite in doing honour to the doyen of Danish oto-laryngology. Prof. Schmiegelow, who was a pioneer in his subject, studied for a time at the London Throat Hospital, and has been a frequent visitor to this country, where he has many admirers and friends.

THE LIVERPOOL HOSPITAL CONTRIBUTORY SCHEME.

AT a public meeting held in the Liverpool Town Hall on Sept. 27th a scheme of voluntary workmen's contributions towards the support of hospitals was adopted with practical unanimity. This scheme provides for the amalgamation of the existing Hospital Saturday and Sunday Funds and for the formation of a Liverpool Voluntary Hospitals' Council, to which shall be appointed an organising secretary of high standing—a whole-time official. The new council proposes to organise collections amongst workmen on the basis of 1*d*. per £ of wages per week, to which it is hoped that employers will add one-third more. The money thus collected will be handed over in proportionate sums to the various voluntary hospitals and convalescent homes in the district, with whom it is stated the entire responsibility as to its expenditure will rest. No charge will be made to the necessitous poor, but all other non-contributors to the scheme will be asked to pay towards their maintenance in hospital. Contributors and their dependents will be admitted and treated free. Judging by the success of the Sheffield scheme, the amount raised should be ample to solve all the financial problems of these institutions if it were not for the casual nature of a large part of the employment in Liverpool. A meeting of the new council will be summoned at an early date.

The scheme introduces a number of problems of vital importance to the medical profession in Liverpool, where there exists a Hospital Staffs Association in whose hands local interests may safely be left. In voluntary hospital administration elsewhere the principle holds that payment of a contribution does not of itself carry the right to the services of the local

hospital, which must depend in the final issue upon the needs of each case and its relative urgency. Assuming this principle to be fully upheld in the Liverpool scheme, the contributions might then be regarded as in the nature of voluntary subscriptions to a charity, the essential character of the Liverpool hospitals remaining unchanged. But it appears that distinction is to be made between contributors and non-contributors; in other words, the contributor is to receive a quid pro quo and his contribution becomes an insurance premium. It will be for the medical staffs of the Liverpool hospitals to adopt an attitude, at once humane and logical, to the continuously growing demand on their highly skilled service.

TRANSLUCENCY OF THE CORNEA.

OPACITY of the cornea is a common cause of impaired vision in every degree from the slightest defect of sight to complete blindness. It is, therefore, important to understand what causes corneal opacities and how far they are curable. The anatomical structure of the cornea consists of parallel fibrous lamellæ bounded on the outside by an epithelium and on the inner side by an endothelium, which normally protects it from infiltration by the aqueous humour. Slight opacities may be caused by injuries to the epithelium but this is soon regenerated and complete transparency may be restored. Infiltration of fluid into the substantia propria may be due to pressure as in glaucoma or to disease such as interstitial keratitis. In this case the infiltrating fluid contains cells and the opacity may be extreme. Nevertheless the infiltration may eventually be completely or almost completely absorbed and the transparency of the cornea restored. A third type of corneal opacity occurs from actual injury of the fibres of the substantia propria such as results from a deep ulcer or a wound. Here the opacity may be partly due to infiltration and, in so far as this is the case, treatment by such things as stimulating ointments may be partially effective, but there remain the cases in which there is actual replacement of the normal fibres of the cornea by scar tissue. In the worst cases such as follow a severe ophthalmia neonatorum the whole cornea may be converted into scar tissue, and in these no treatment which has hitherto been devised can possibly restore the transparency. A suggestion has been made by Dr. S. G. Moore, who has seen the wonderful specimens prepared by Prof. Spalteholz, of Leipzig, in which the tissues are rendered so translucent that, for example, injected arteries are readily seen in relief in transmitted light—that this process, applied to living tissues, might restore some measure of useful vision in cases of blindness due to opacity of the cornea. Dr. Moore believes this process to be secret, but reference to Bulletin No. V. (p. 41) of the International Association of Medical Museums shows that it consists in impregnating the tissues with a fluid of suitable refractive index, composed of oil of wintergreen and benzyl benzoate. Although the application of methods of this kind to living tissues was foreshadowed by Mr. H. G. Wells in his "Invisible Man," it can hardly be expected that living protoplasm should survive so gross an insult to its normal refractive index.

OTAGO MEDICAL SCHOOL.

AN experiment in clinical instruction is about to be made in Otago. The plan of university education in New Zealand is adapted to its topographical needs and differs from that elsewhere. The University of New Zealand is an examining and degree-granting body, with headquarters at Wellington; it prescribes courses and appoints examiners, but it undertakes no teaching. All instruction is carried on in the four constituent colleges—Auckland University College; Victoria College, Wellington; Canterbury College, Christchurch; and the University of Otago, Dunedin. The early settlers of Otago, in good Scots fashion, established their University before that of New Zealand was founded, and Otago has consequently retained the title of University, though it does not now grant degrees. Arts and science, and some other subjects, can be studied at any of the centres, but the professional faculties are concentrated at single colleges; engineering, for instance, at Canterbury College, and medicine at Otago University. Some years ago the Dean of the Otago Medical School put forward a proposal that the medical curriculum should be extended from five years to six, which had already been done, either avowedly or in practice, in various overseas schools. The proposal aroused considerable discussion, and the Senate of the University of New Zealand decided to refer the question to the New Zealand Branch of the British Medical Association for an opinion. A good many members were averse from the extension, and there was a general feeling that if a year were added to the course it should be a "clinical" year and also that facilities should be afforded for spending it in the public hospitals of other centres of the Dominion—namely, Auckland, Wellington, and Christchurch, and not wholly in Dunedin. This proposal, writes our New Zealand correspondent, could not be complied with in its entirety. There was never any intention of leaving the curriculum as it was, and merely adding another year during which students should kick their heels until they had put in the necessary terms to allow them to sit the final examination. One of the additional terms was required for the "intermediate" subjects, chemistry, physics, and biology, and one for the "first professional" subjects, anatomy and physiology, leaving only one term for additional clinical study. However three complete years, or nine terms, are now available for clinical work, and by the new scheme a student may elect to spend one, two, or three terms of the final year in the hospital of another centre, provided an adequate syllabus has been submitted by the medical staff of the hospital concerned to the Faculty of Medicine in Dunedin; all the hospitals have now submitted schemes, and one, at least, is providing quarters for the students. This public-spirited action on the part of the hospital staffs concerned will mean a considerable addition to their work. By this arrangement the students' clinical experience will be undoubtedly much increased, since the whole facilities of a considerable hospital will be available for a small group who have already had two years' ward-training. The result will be watched with interest by other schools.

THE DÜSSELDORF CONFERENCE.

THE eighty-ninth conference of Naturforscher and Ärzte at Düsseldorf from Sept. 19th to 26th was divided into 34 sections and attended by well over 8000 scientists and medical men from Germany and German-speaking countries, so that its mere size gave rise to difficulties in organisation, while the large proportion of natural scientists resulted in the treatment of medical subjects on lines suitable for the advanced medical student. But these difficulties were largely surmounted by Dr. Arthur Schlossman and Frl. Dr. Marta Fraenkel, who were responsible for the arrangements. The outstanding feature of the conference was a series of communications by Prof. P. Mühlens (Hamburg), Prof. F. Sioli (Düsseldorf), Drs. Hörlein and Röhl (Elberfeld) on a new synthetic remedy for malaria, to which the name plasmochin had been given. Tested first by Röhl on canaries infected with bird malaria, it was then administered by Sioli to paralytics under treatment by malaria, in whom repeated doses of 0·2 g. proved uniformly effective. Mühlens and his colleagues began to use the drug at the Hamburg Tropical Diseases Institute in August, 1925, and 134 cases from all parts of the world have now been treated with careful daily control of the blood. The preparation is almost tasteless and for this reason especially useful for children. Four to six weeks' treatment are required. Fever and parasites disappeared in a few days and relapses were less numerous than when quinine was

used. Above all, the new preparation was found to destroy the crescentic sexual forms which were banished from the circulation within five to seven days, while early treatment with plasmochin effectually prevented their appearance. The story of this successful search for a plasmodicidal agent was the sequel to an admirable account by Prof. Nocht (Hamburg) on the previous day of the various recent essays in chemotherapy, including the discovery of germanin (Bayer 205) which with its single haptophore group held its victims fast, like a limed twig, so that they fell a prey to their natural enemies. To English hygienists the joint meeting of the sections of hygiene and veterinary medicine was made noteworthy by the presence of Prof. Ostertag. The communication by Dr. Bahr (Copenhagen) on the endotoxin of the paratyphoid-Gaertner group rendered due credit to the work of the English bacteriologists. Prof. Miessner (Hanover) gave an account of paratyphoid and paradysentery in cattle with an important statement on paratuberculosis. Dr. Beck (Leipzig) reviewed the possibility of disease transmission by pigeons, the organism he had isolated being of the Breslau type. In another section much interest was taken in an account by Dr. P. Schwartz (Frankfort) of the effect of injuries to the skull and brain during childbirth, supported by convincing slides of morbid anatomical specimens. Hæmorrhage from the vena terminalis might account, he thought, not only for porencephaly but for the onset of hydrocephalus, syringomyelia, and even of some cases of epilepsy. During the week conducted visits were paid to the enormous Health Exhibition (Gesolei), Prof. F. Fülleborn acting as guide to the tropical diseases exhibit. The social side of the meeting was well organised, and the next conference might well attract more representatives from this country.

A LUNCHEON was given by Sir Kingsley Wood, Parliamentary Secretary to the Ministry of Health, on Tuesday last, at the Hotel Victoria, S.W., to an international gathering of port medical officers, who are now in this country as guests of the Government. The presence of the visitors, followed on the terms of the new convention, agreed upon at the International Sanitary Conference, with respect to sanitary measures at ports and their international arrangement.

Obituary.

DAVID EWART, O.B.E., M.D., F.R.C.S. EDIN.

Dr. David Ewart, of Chichester, who died on Oct. 2nd, was a practitioner of high reputation in West Sussex, where he had worked for about 25 years. He was educated in New Zealand and at the University of Edinburgh where he was Grierson Bursar in pathology and bacteriology in 1898. Soon after graduating with honours in the following year he was appointed to the Chichester Infirmary, where he remained as house surgeon for two years, after which he was elected surgeon and took up practice in the district in partnership with the late Dr. Skaife. From that time onwards he steadily built up a reputation for the infirmary and for himself. He started departments for ophthalmic and aural work and undertook an ever-increasing amount of major surgery of all kinds. At the same time he built up a large private practice and was in frequent demand as a consultant and as an ophthalmic and operative surgeon. The Chichester Infirmary was enlarged and improved in 1913, being reopened by the King as the Royal West Sussex Hospital, and in this work of reconstruction Dr. Ewart played an important part. The war broke out soon afterwards and the scope of his activities was further enlarged by his appointment as surgeon to the Military Hospital of 1100 beds formed by temporary conversion of the county mental asylum; this additional heavy work put a serious strain upon his health. Dr. Ewart could not take much part in non-medical affairs in the district, but found time for service as a member of the Council of the British Medical Association, and was at one time chairman of the Dominions Committee. He also held consulting appointments at the King Edward VII. Sanatorium at Midhurst and other institutions in the neighbourhood, and in April of this year was elected chairman of the board of management of the Royal West Sussex Hospital.

Dr. Ewart leaves a widow and six children.

JAMES BARRY BALL, M.D., F.R.C.P. LOND.

Dr. Barry Ball, who died at his home in Abingdon on Oct. 2nd, was well known in London before his retirement as a specialist in diseases of the ear, nose and throat, and was appreciated as a valuable colleague and a man of high ideals. He was born at Manorhamilton in County Leitrim in 1849, and studied medicine at University College, London, qualifying in 1870. After some years of general practice in Brixton he became a member of the Royal College of Physicians in 1885, and in the same year was appointed assistant physician to the West London Hospital, which he served with zeal and devotion for a long period. In 1887 he was given charge of the throat and nose department and ten years later took over the ear department as well, shortly afterwards resigning his appointment as physician so as to give his whole attention to this special work. In 1905 he left the active medical staff and was made consulting physician and a member of the board of management, positions which he held until his death. Dr. Ball's work for other institutions was also considerable. He was consultant physician to the Hospital of SS. John and Elizabeth, lecturer to the West London Post-Graduate College, and examiner in laryngology and otology to the Royal Army Medical College. For over 20 years he was physician to the Rock Life and other assurance companies, which he served always with tact and judgment. He was also the author of a Handbook of Diseases of the Nose and Pharynx which reached a fifth edition, and made numerous contributions to Quain's "Dictionary of Medicine" and to the medical journals. Dr. Ball's work was recognised by his election as President of the Laryngological Society of London and to the Fellowship of the Royal College of Physicians. Those who enjoyed his friendship speak of his loyalty and warmth of heart, whilst those who met him casually found that a retiring manner did not always conceal unusual and welcome wit.

Dr. Ball leaves a widow and one daughter. He lost his only son in the war.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Lt. Comdr. L. R. Warburton to be Surg. Comdr.
T. A. Cochrane to be Surg. Lt.

ROYAL NAVAL VOLUNTEER RESERVE.

Proby. Surg. Lts. (D) to be Surg. Lts. (D): C. T. Pomeroy and W. E. L. Brigham.

ROYAL ARMY MEDICAL CORPS.

Maj. A. H. Heslop retires on retd. pay on account of ill-health.

REGULAR ARMY RESERVE OF OFFICERS.

Col. F. Kiddle (late R.A.M.C), having attained the age limit of liability to recall, ceases to belong to the Res. of Off.

Lt.-Cols. L. A. Williams and G. B. Riddick, having attained the age limit of liability to recall, cease to belong to the Res. of Off.

MILITIA.

Maj. E. T. Holland retires on attaining the age limit.

TERRITORIAL ARMY.

Capt. J. Blackwood to be Maj.
Capt. (Prov.) R. M. Savege is confirmed in his rank.

ROYAL AIR FORCE.

Flying Officers B. W. Cross and J. MacConnell Kilpatrick are granted permanent commissions in their rank.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CXCII.

TREATMENT OF ACUTE INTUSSUSCEPTION IN INFANTS.

THE crucial importance of early diagnosis of intussusception in infants may be gathered from operation statistics. Operation within 12 hours of onset is almost invariably successful, whereas the mortality-rate in cases left 24 hours or longer varies from 30 to 60 per cent. Every hour is thus of importance from the point of view of prognosis.

Diagnosis.

Acute intussusception occurs typically in strong healthy infants, often of the male sex, the commonest age being 4 to 8 months; there is a history of sudden onset of acute abdominal pain, occurring in spasms, shortly followed by vomiting and later by the passage of blood. Between the spasms of pain during the early stages the baby may appear perfectly healthy, and this should be remembered. Often the onset is less typical, the appearance of blood being delayed for many hours. It is in these cases that the palpation of the typical sausage-shaped tumour clinches the diagnosis, and unless this tumour is felt the diagnosis is doubtful. A thorough abdominal examination in every suspicious case is essential, and for this an anæsthetic is often required. Before giving the anæsthetic it is wise to make preparations to proceed to immediate operation should the intussusception be found, but this is not always feasible; for example, if operation entails a long journey the practitioner must make his own diagnosis before referring the child to the surgeon. The anæsthesia must be deep in order to get complete relaxation of the abdominal muscles, and the whole abdomen must be carefully and systematically palpated in order to find the tumour; this may be hidden in the region of the hepatic flexure by the liver, or at the splenic flexure if the tumour lies practically under the costal margin. Often the tumour is small and very mobile, slipping from under the examining fingers. In the absence, even under anæsthesia, of any palpable tumour, I myself do not operate. When the diagnosis is established treatment nearly always involves opening the abdomen. The only possible exception is when local conditions make surgical procedures impossible. Then, and only then, is treatment by the injection of fluids per rectum justifiable. The chief objection to this method of treatment is that it is impossible to tell whether reduction so effected is complete; during operation it is clear that it is the last inch or so which is the most difficult to reduce. However, there can be little doubt that a considerable number of intussusceptions reduce themselves and may give no further trouble, though recurrences among these cases are not uncommon.

Reduction by Operation.

Pre-operative treatment is of great importance, since these children are depleted of fluid as a result of the frequent vomiting. In every case it is wise to administer subcutaneous saline into the axillæ or loins before operating; improvement immediately follows the saline infusion. The patients should be well warmed up in bed for at least an hour, and a hypodermic injection of atropine, 1/150 gr., should be given half an hour before the anæsthetic. The operating theatre should be kept at a temperature of 75° F.; the child's limbs should be bandaged with cotton-wool, and when possible the table should be artificially heated.

Anæsthetic.—Where the child is not in good condition the anæsthetic of choice is gas and oxygen, with a minimum of ether in addition, but if this form of anæsthesia is not available ethyl chloride, followed by ether, gives almost equally good results. Anæsthesia must be deep, since should the intestines be forced out by straining, the operation not only becomes more difficult, but the shock is greater, and much time may be lost.

The *incision* depends on the site of the tumour. Where the intussusception is proximal to the splenic flexure, the muscle-splitting incision of McBurney gives ample room and can be rapidly performed. Where the tumour has passed into the descending colon this incision gives insufficient access and a vertical paramedian incision is indicated.

Operative success depends mainly on (1) rapidity, and (2) extreme gentleness in handling. The peritoneal cavity is opened and two fingers of the right hand are passed into the abdomen to seek the tumour. When it is found reduction is attained by milking it gently backwards along the colon within the abdomen, until the ileo-cæcal region is reached. Difficulty may be experienced at the two least mobile portions of the colon, the splenic flexure and the hepatic flexure, but only because they are awkward to reach and manipulate. The actual reduction gives trouble, as a rule, only in the terminal two or three inches, on account of the great swelling and œdema of the parts. At this stage the intussusception should be brought out of the abdomen and the milking process continued with great care. In a favourable case reduction can be accomplished without any damage to the peritoneum of the bowel wall. When the last portion of bowel is being reduced, the typical dimple will be seen where the intussusception commenced, generally within an inch or so of the ileo-cæcal valve. This dimple is a cup-shaped depression which should be carefully obliterated.

In some cases—generally those of long duration—the peritoneal coat of the cæcum may give way during reduction. This calamity may often be prevented by a simple manœuvre which, moreover, facilitates reduction; the tumour is surrounded by a hot moist swab and uniform pressure is exerted on it in order to reduce the œdema. When pressure has been maintained for some 30 seconds reduction is often effected easily. A tear in the peritoneal coat is not necessarily a sign of irreducibility, and unless it is obvious that reduction is going to be impossible or that the bowel is gangrenous, efforts should be continued in spite of it. It is important, however, that any tears in the large bowel should be sutured with very fine catgut, lest infection passes through the bowel wall and peritonitis ensue.

When reduction has been completed nothing further should be done. The abdomen should be rapidly closed. In children under a year it is a mistake to remove the appendix or to attempt fixation of the invariably mobile cæcum, since extra handling of the bowel in addition to the extra time required increases the risk of a fatal issue. A simple operation for reduction alone can be performed, from incision to closure, in seven minutes, and should never take more than 15 minutes in skilled hands. If the child is over a year old and is in good general condition the appendix may be rapidly removed.

Recurrence.—Since the operation of reduction does nothing to remove the conditions, whatever these may be, producing intussusception, it is curious that recurrence is so rare—about 2 per cent. in my experience. The fixation of the cæcum, while theoretically a useful procedure, does not seem to prevent recurrence of an intussusception at a later date.

Operative Technique in Irreducible Cases.

When the intussusception is irreducible the prognosis is always very grave, and it is rare for a child under a year old to survive operation.

When the intussusception is absolutely irreducible or is gangrenous the methods to be considered are: (1) Resection of the affected area with anastomosis of the bowel; (2) resection combined with temporary enterostomy to be followed later by anastomosis; (3) temporary enterostomy without resection. Several other procedures have been suggested. In my experience the only one giving satisfactory results in infancy and childhood is the first method mentioned above. Although the mortality in infants under a year is very high, this is undoubtedly the best procedure. A rapid resection between clamps should be carried

out, and, as a rule, a lateral anastomosis between ileum and transverse colon, or between two portions of ileum, is the most satisfactory way of dealing with the bowel.

Closure of the Abdomen.

When the reduction has been effected or anastomosis and resection performed, the abdomen should be closed as rapidly as possible. If the muscle-splitting incision has been used two layers of sutures are desirable, but to close the vertical paramedian incision through-and-through sutures of interrupted silkworm-gut introduced with a Doyen's handled needle should be used, the stitches being prevented from cutting too deeply by means of rubber tubing threaded on the silkworm-gut. In both cases Michel's clips are used to bring the edges of the skin into perfect apposition. A small gauze dressing is applied and is maintained in position by the application of a large oval piece of Mead's strapping. No bandage is required. The wound need not be dressed until the clips are removed on the fifth day, while the through-and-through sutures remain in for 10–12 days.

Post-operative Measures.

Post-operative measures consist chiefly in the administration of fluids and the maintenance of warmth. The child should receive subcutaneous saline four-hourly for 12 to 24 hours, and should be kept warm by means of an electric cradle in the cot. For the first few hours the foot of the bed should be raised, to mitigate collapse. The temperature should be taken three- or four-hourly as hyperpyrexia is not uncommon in the first 24 hours; if it occurs the electric lamp should, of course, be extinguished, but it is important not to bring down the child's temperature too rapidly, and unless the temperature rises higher than 104° F. no tepid sponging need be carried out. In an uncomplicated case a little sugar and water may be given by mouth after six hours; if the child is on the breast the milk should be drawn off and given in teaspoonful feeds every two hours for another 6 to 12 hours. If there is no vomiting the child may be put to the breast for five to ten minutes every three hours for the next 24 hours and given sips of water if thirsty. Thereafter normal feeding should be resumed. Aperients should be avoided for the first six days, after which a teaspoonful of castor oil may be given, provided the child is doing well. If, however, there is any sign of distension or any vomiting, a gentle rectal wash-out is preferable to the aperient.

Where resection has been carried out feeding should be commenced more gradually. It is wise to give nothing but water and albumin water for 24 to 36 hours, supplemented where necessary by subcutaneous saline. Should the abdomen become distended and vomiting recommence, the stomach should be washed out with a little sodium bicarbonate.

Post-operative Complications.—Vomiting may be troublesome for 24–36 hours, and if severe, should be treated by stomach lavage, repeated six-hourly if necessary; meantime subcutaneous glucose saline must be relied on for nourishment. *Enteritis*, sometimes occurring about the third or fourth day in an infant which has had to be suddenly weaned, is a complication to be dreaded. An immediate dose of castor oil is indicated, followed by routine medical methods, and very careful nursing may save the child. *Obstruction* is rare, except where due to a temporary paresis of bowel, which responds better to stomach and colon lavage than to stimulants such as pituitrin. When obstruction is due to peritonitis the prognosis is hopeless. *Recurrence* during convalescence calls for immediate operation, of which the result is often successful. Recurrence at a later date is nearly always diagnosed immediately by the parents, and the patients generally do well after a second operation.

GERTRUDE HERZFELD, M.B., F.R.C.S. Edin.,
Surgeon to the Royal Edinburgh Hospital for Sick Children; Lecturer in Diseases of Children, University of Edinburgh.

Special Articles.

THE ST. MARY'S POST-GRADUATE COURSE.

THE post-graduate course held for the fifth year in succession at St. Mary's Hospital, London, over the first October week-end was the most successful of the series, many practitioners availing themselves of the opportunity offered without fee to refresh their knowledge in some direction or other of modern medicine. The demonstrations of cases by Dr. C. M. Wilson and Mr. R. M. Handfield-Jones on Sunday morning do not lend themselves to brief notice, but of the ten more formal lectures an epitome of three may serve to indicate the practical and useful scope of the meeting.

The Scope of Cæsarean Section.

On Oct. 2nd, the first day of the meeting, Mr. Aleck Bourne considered the proper place of Cæsarean section as a means of delivery in abnormal labour. The first, and still the chief indication, is contracted pelvis, and to-day, after much clinical experience, most obstetricians agree that there are very few other abnormalities which are properly so treated. The deliberate operation should be done for contracted pelvis if, before the thirty-sixth week of pregnancy, the head cannot be made to enter the brim of the pelvis. Induction of labour is a better method for the minor degrees of contraction which would cause difficult labour at term. The great disagreement, however, ranges round the question of the operation after attempts at vaginal delivery have failed—in other words, "the failed forceps case." It is very commonly done for this condition, and justification is sought in the occasional escape of the mother from the fatal termination, but an experience based on two or three cases is of no value. Only by the consideration of a large number can an opinion properly be formed. The pressing dangers are an immediate shock, caused by a severe operation done for one who is already exhausted; later, sepsis, causing fatal peritonitis or sloughing of the abdominal wound and uterine fistula, and, in the future, risk of rupture of the uterus in a subsequent pregnancy or labour due to an imperfect union of the infected muscle walls of the uterus. Now the average mortality of the operation done before labour is about 1·5 per cent., while after attempts at forceps delivery it rises to 27 per cent. (Kerr and Holland's collection). This very sharp rise in the death-rate shows that the danger is very great, and should only be faced under exceptional conditions. Nor can we find justification for Cæsarean section, after failure with forceps, by a consideration of the fœtal results. Of 100 babies subjected to the fruitless stress of forceps and later delivered by the abdomen, nearly half did not leave the hospital alive, and of those who do survive there is an uncertain number who suffer from impaired and backward development throughout childhood. This means that the mother is being subjected to a risk of 27 per cent., and a much greater chance of subsequent ill-health due to uterine adhesions, fistula, &c., or even later rupture of the uterus, for the sake of a baby that has barely one chance in two of survival. Only rarely will forceps fail to deliver, given the essential lapse of sufficient time for moulding, but when they do fail the alternative is not Cæsarean section but the perforator. Central placenta prævia is probably the next commonest indication. The lateral and many marginal cases can be well and safely treated by pulling down a leg or rupturing the membranes, with or without plugging. Even central placenta prævia should only be operated on if the mother is in good general condition. To deliver by the abdomen when the mother is already blanched is to invite disaster. Such cases should be treated by the most conservative vaginal methods. If,

however, the condition of both mother and baby is good and the patient is first seen before or early in labour, then Cæsarean section will probably save both mother and child. Obstructing pelvic tumours compel abdominal delivery if they are actually incarcerated in the pelvis and cannot be pushed up. Certain malpresentations, such as the brow, the shoulder, or even the breech in an elderly primigravida may be treated by Cæsarean section, especially if there has been a previous stillbirth. On the other hand, Mr. Bourne concluded, the operation is a dangerous method of delivery for eclampsia when compared with conservative vaginal methods, inasmuch as it doubles the mortality, whether the case is mild or severe when first seen.

The Rheumatic Problem in Children.

On Oct. 4th Dr. Reginald Miller, dealing with rheumatic children, referred briefly to the magnitude of the problem considered as a national health question, and discussed some of the chief difficulties in dealing with the disease on a large scale and the possible lines of their solution. First, as regards the causation of the disease, hereditary factors are not of such moment as environmental factors such as climate, poverty, damp houses, industrialism, exposure to wet during attendance at school. So far as these factors can be controlled they must be left to the public health and school services. Secondly arises the question of tonsillectomy. Nearly every rheumatic child has chronic tonsillitis, and to leave such tonsils untreated is to fail to give the child its best chance. Early and complete tonsillectomy gives considerable protection against heart disease, though not apparently against uncomplicated chorea. Third is the difficult matter of the development of heart disease. This often occurs while the child is apparently well and attending no doctor. Practitioners and hospitals can do something by instructing parents in the dangers of the disease, but to meet the difficulty properly some form of supervision of the children must be evolved. Parents must be taught to bring their children for examination every few weeks whether they appear ill or not, just as in cases of epilepsy or syphilis. In hospital practice it would be easy to establish a "rheumatism bureau," the children being listed and sent for to be seen by their respective physicians periodically. A better plan would be to establish a "rheumatism supervisory centre," open once a week, where cases can be sent for periodic examination while they are apparently well and arrangements are made in writing for the child to go back at once to its own doctor should acute symptoms supervene. With this system a good deal of useful research work could be undertaken. In dealing on a large scale with the problem of rheumatism and heart disease it is to be hoped that the mistakes made in the antituberculosis campaign may be avoided. We do not, said Dr. Miller, want the so-called expert and the treatment clinic. More beds are needed for children with damaged hearts to obtain the prolonged modified rest so necessary for them; these might be provided in special wards of convalescent homes or special hospitals in the country, provision being made for education and for the easy transfer of cases between hospitals and rest-homes.

Use of Radium in Gynæcology.

On Oct. 4th Mr. T. G. Stevens said that at present radium was chiefly employed in gynæcology in the treatment of carcinoma of the cervix, carcinoma of the vagina, and the severe hæmorrhages of chronic metritis. The attitude of most surgeons, he said, was that in carcinoma of the cervix radium applications should be reserved for clinically inoperable or borderline cases, in the belief that extended panhysterectomy gave better results in operable cases. There were no data at present available to prove this belief, as no large series of operable cases had been treated by radium alone, and it was quite possible that with increasing knowledge of the right technique the results of radium treatment alone in operable cases would prove to be as good as or better than those obtained by operative means. The method of application, said Mr. Stevens, varied in different clinics; in some of them concentrated doses were applied inside the uterus and in the vagina by means of platinum tubes containing 50 or 25 mg. of radium element; in others the maximum dose determined upon was applied by means of needles containing small amounts of radium element spread out around the growth by circular implantations. At St. Mary's Hospital each of the needles used contained 2 mg. of radium element; but in France the tendency was to employ even smaller doses (1 mg.), using a large number of needles and leaving them in situ for a correspondingly longer time. There was not at present sufficient evidence to show which of these two methods gave the better results. The dose given in any case was computed by multiplying the number of milligrammes of radium element used by the number of hours of the application. In general it might be said that 2400 mg. hours was the usual dose, but in the case of large growths this might be considerably increased. The first dose might be followed by a second after three weeks had elapsed, using a similar amount of radium, but after this no further treatment should be given for six months; no benefit appeared to result from any further application, and in some cases, indeed, it seemed to have been harmful. Before applying radium, continued Mr. Stevens, it was most important that the growth should be disinfected as far as possible. A useful method was to pack the vagina with a strip of gauze soaked in 10 per cent. Milton solution for 24 hours, repeating the packing twice, and then to swab the growth all over with flavine solution just before applying the radium. It was better not to curette the growth, as this appeared to open up avenues for infection and dissemination. When concentrated tubes were used, one should be placed in the uterine cavity well above the growth, and others should be applied accurately against the vaginal surface of the growth. The latter were often difficult to keep in place, and sometimes must be sutured to the vaginal roof to ensure immobility. The vagina must be packed with gauze soaked in flavine, taking care to push the rectum as far away from the radium tubes as possible with the gauze pack. This was done to protect the very sensitive rectal mucosa from the radium rays, and to prevent fistula formation. Whilst the bladder seemed to be much more resistant to the rays than the rectum, it also could be protected by carefully applied gauze packing. In most cases it was advisable to suture the labia together, to prevent any extrusion of the gauze pack, and to insert a self-retaining catheter into the bladder so as to avoid any disturbance due to micturition. The same technique was used in the treatment of carcinoma of the vagina. Concentrated tubes were nearly always used, and were generally sutured in direct apposition to the growth. In chronic metritis, said Mr. Stevens, in conclusion, radium was at the present time the most useful means of treatment. The result aimed at was complete cessation of menstruation, which formerly could not be secured except by hysterectomy or tedious X ray treatment. Chronic metritis in women over 40 usually caused very severe and prolonged menstrual losses, and these could be completely stopped by a single application of radium—100 mg. for 24 hours placed in the uterine cavity after dilatation. Curettage was usually done in such cases to eliminate the possibility of carcinoma of the body of the uterus.

ORTHOPÆDICS AT BIRMINGHAM.—The first annual report of the Birmingham Cripples' Union and Royal Orthopædic and Spinal Hospital, as an amalgamated institution, records an enormous increase in the work and heavy unsatisfied demands. It is intended to transfer all bed cases to an open-air suburban hospital, the site for which has been given by Mrs. George Cadbury. The full scheme contemplates a hospital of 300 beds which will serve as the orthopædic centre for Birmingham and the Midlands.

THE TWELFTH INTERNATIONAL SANITARY CONFERENCE.

A NEW CONVENTION.

THE twelfth of a series of International Sanitary Conferences which have regulated quarantine procedure, at first in Europe and later throughout the world, was convened in Paris on May 9th of this year, and resulted in the signature of the Sixth International Sanitary Convention.

The first of these conferences met at Paris in 1854, and those succeeding it have each in turn shown a widening view of quarantine action and have reflected the steady growth of knowledge. The earlier conferences were summoned to protect Europe from plague and cholera introduced from other continents, but the tendency has been more and more to look on the world as an organic whole, each part of which is to be guarded by wise and suitable quarantine precautions against the spread of epidemics. At this last conference 70 different nations and territories were represented, as compared with 42 in 1911 and 23 in 1903.

After the conclusion of peace the Office International d'Hygiène Publique, which is the body entrusted by international agreement (Rome Accord 1907) with the duty "of suggesting modifications that it might be advantageous to make to the Conventions" undertook a draft revision of the 1912 Convention. This revision was rendered necessary by the results of scientific research, by the lessons learnt in the war and in epidemics after it, and by alterations of political boundaries and conditions. In 1922 a draft revision was completed and delivered to the French Government for communication to the Powers. In February, 1925, a final revision was ready. It was on this draft that the new Convention was based, and it was owing to this preliminary work that the conference was able to finish its work in a relatively short time, in spite of the wide and various alterations proposed.

The conference assembled on May 10th at the Ministère des Affaires Etrangères, where its sittings were continued until the signature of the Convention. It was opened by Mr. Durafour, the Minister of Health; Mr. Camille Barrère, the senior delegate of France, who had presided over the 1903 and 1911 conferences, was elected president, and Dr. H. Pottevin, who has since been elected director of the Office International, was appointed rapporteur-général.

Although the draft revision had been accepted as a basis by the representatives of the various Powers, several questions and even principles of action remained at issue, and involved long and close debate; but in the end a text was agreed upon and the Convention was signed by most of the delegates on June 21st. It should prove a good practical instrument, with enough elasticity to allow for the differing conditions of the territories concerned, yet sufficiently binding, on the one hand to ensure adequate defence against epidemics, and, on the other, to prevent exaggerated action.

The New Convention.

The scope of the Convention is extended to include typhus and small-pox in addition to plague, cholera, and yellow fever, which were dealt with in the last Convention.

It early became apparent that there were two tendencies of thought as to the nature of the Convention to be drawn up. One aimed at an instrument that should definitely regulate quarantine action under all circumstances and render its execution almost automatic. The other held that a Convention dealing with such varying conditions of climate and people must be an elastic instrument allowing individuality of action within clearly defined limits. The latter view was adopted by the conference, and this principle is clearly established in Article 15, which is in fact the key to the Convention's principle of action. It lays down:—

1. That any ship may be thoroughly examined by the sanitary authority on arrival if circumstances require it whether it is from an infected or from an uninfected port.
2. That the sanitary procedure is to be determined by the conditions existing on the ship and by the medical history of the voyage.
3. That it rests with the Government to determine in accordance with the Convention what procedure is applicable in its own ports.
4. That the measures laid down by the Convention are to be considered a maximum within which the Government may take action.

This elasticity of action is further assisted by Article 57, a very important Article which enables Governments, taking into account their particular situation, to make special arrangements among themselves so that the sanitary measures of the Convention may be more efficacious and less burdensome. Thus, for instance, States can mutually arrange to dispense with elaborate precautions at the port of arrival in consideration of special precautions taken at the point of departure or on the voyage.

Notification of Diseases to Foreign Governments.

Under previous Conventions notifications were made through diplomatic channels—a method which was slow and cumbersome. It was clear that the time had come to establish a central clearing-house of sanitary information, which should rapidly communicate to all concerned information of the occurrence or outbreak of epidemic diseases, and which should collect and distribute to the signatory States details of the sanitary condition, equipment, and organisation of the various ports. The Convention constitutes the Office International the authority responsible for carrying out these duties. At the same time it empowers the Office to make arrangements with the Health Committee of the League of Nations, the Pan-American Sanitary Bureau, and similar organisations, to facilitate the fulfilment of its duties under the Convention, on the understanding, however, that these arrangements do not involve any infringement of the Rome Accord. Thus to carry out its new duties the Office International will be able by arrangement to make use of the Epidemiological Intelligence Centres already existing—i.e., the League of Nations Bureau at Geneva and its branch office for the Far East at Singapore, and the Pan-American Centre at Washington and its branch at Montevideo.

Classification of Ships and Deratisation.

Under the old Convention the conditions which caused a ship to be classified as healthy, suspected, or infected were laid down in a common category for the three diseases, in spite of the epidemiological differences in their behaviour. In the new Convention a separate subsection is devoted to each of these diseases; these subsections specify for each disease the conditions which entail a ship's being classified as healthy, suspected, or infected, and state what action should be taken in each case. This rearrangement will be a great advantage to all concerned.

Certain alterations were necessitated by increased epidemiological knowledge. The paramount importance of the rat and the flea in the spread of plague had to be recognised. It was not considered advisable to make the first case of rat plague notifiable under Article 1 of the Convention in the same way as human plague, although this was strongly urged by some of the signatory Powers; but under Article 6 Governments undertake to do all in their power to keep themselves informed as to the conditions of rats in their ports, and to furnish full information on the subject at regular intervals to the Office International.

The Convention exacts either the permanent rat-proofing of ships or deratisation every six months. Ships thus treated must be given a certificate

exempting them from further deratisation for six months; but, on the other hand, the sanitary authority is given authority to deratise a healthy ship in exceptional circumstances and for well-founded reasons communicated in writing to the captain. In this way the balance is maintained between the desirability of keeping down the rat population on ships and the hardship inflicted on shipping interests by repeated and possibly unnecessary deratisation.

Regulation of Travel and Transit.

Cholera.—The Convention recognises the importance of anticholera vaccination by exempting in certain cases persons vaccinated against cholera from detention under observation. The importance of the cholera carrier receives limited recognition only. The conference adopted the view that the examination of healthy persons travelling on ships coming from an infected area demands such elaborate organisation and technique and involves so much inconvenience to passenger traffic that its enforcement is impracticable, and that reliance should rather be placed on anticholera vaccination. The Convention, however, requires persons under observation or surveillance to give facilities for bacteriological examinations if considered necessary; this enables healthy persons on an infected ship to be examined for the cholera vibrio during the period of observation or surveillance.

Yellow Fever.—The regulations dealing with this disease are remodelled so as to give full recognition to the part played by *Stegomyia calopus* in its transmission.

Emigrants.—A new section is introduced dealing with emigrants. This section enforces the medical examination of all pilgrims at the point of departure, so that rejections at the frontiers of countries of transit and destination may be reduced to the fewest possible, and recommends that certain medical and sanitary arrangements should be made at the port of departure and on the voyage.

Bills of Health.—A new Article recommends (1) that Bills of Health should be issued free of charge; (2) that charges for consular visas should be equivalent to the cost of service only; and (3) that special agreements should be made with a view to the gradual abolition of consular visas and Bills of Health. When the Office International is working as an intelligence bureau and port authorities are in consequence kept fully and promptly informed of the sanitary conditions at other ports, the need for Bills of Health and consular visas will have ceased to exist.

Merchandise and Baggage.—The new Convention lays down that merchandise and baggage arriving by sea and land may not be forbidden either entry or transit. The only measures permitted are disinsectisation, deratisation, and disinfection, and these only in special circumstances. This is a great advance on the 1912 Convention which permits the prohibition of entry of merchandise in the case of plague and cholera—a prohibition that cannot be justified on epidemiological grounds.

Pilgrimages.—The sanitary supervision of pilgrims travelling by the Hedjaz railway, entrusted by the 1912 Convention to the Constantinople Superior Board of Health, which ceased to exist soon after the outbreak of the world war, is now entrusted to the States traversed by the railway. Similarly, the sanitary supervision of the Black Sea ports and the Straits, formerly under the charge of the same Board, is undertaken by the Turkish Government which is a signatory of the Convention.

An important Article entrusts to the International Quarantine Board of Egypt the duty of transmitting to the sanitary authorities of the countries concerned and to the Office International all sanitary information as to the pilgrimage and as to the sanitary conditions of the countries through which the pilgrims pass. The International Quarantine Board, in addition to its other functions, thus becomes an intelligence bureau for the pilgrimage area.

MEDICINE AND THE LAW.

Milk Prosecution: Sample 50 per cent. Deficient in Fat.

THE Sale of Food and Drugs Acts are intended to protect the community from the disadvantages and dishonesties of adulteration. They penalise sales "to the prejudice of the purchaser" of articles of food or drugs which are "not of the nature, substance, and quality" demanded. Where the article of food is milk, cream, butter, or cheese, the Minister of Agriculture may make regulations determining what deficiency in the normal constituents of such foods, or what addition of extraneous matter or proportion of water, in any sample shall raise the presumption (until the contrary is proved) that the food is not genuine or is injurious to health. In 1901 it was provided by the Sale of Milk Regulations that, if a sample of milk (not being sold as skimmed, separated, or condensed milk) contained less than 3 per cent. of milk-fat, the milk should be presumed (until the contrary was proved) not to be genuine by reason of the abstraction therefrom of milk-fat or the addition thereto of water. In discussing lately the unsuccessful prosecution of a Norfolk farmer, it was shown that the standard of 3 per cent. of milk-fat can be easily evaded. The farmer, it may be remembered, showed that the deficiency of fat in a sample from his churns (a deficiency of 42 per cent. below the standard) was not due either to the abstraction of fat or to the addition of water. He and other witnesses proved that the milk had not been tampered with from the time it left the cow to the time it reached the purchaser. He had a perfectly good explanation of the deficiency—namely, that he had been adopting a course of partial milking, the fore part of two cows' milk being placed in churns for sale, the after part being left for the cows' calves. The prosecution alleged it was common knowledge that in such a course of milking the fore part of the milk is less rich in fat. It is common sense that, if a farmer knows that he is giving the calves the benefit as against the purchaser, his sale of the less rich milk (which thereby falls below the prescribed standard of purity) should be treated as a sale to the prejudice of the purchaser. The purchaser should at least have a right to be told that he is not getting what he expects. This, however, is not the law. Owing to the wording of the Acts and Regulations it was possible for the courts to decide in 1917 (in the Case of Grigg *v.* Smith) that, where there is a course of exceptional milking, the farmer is at liberty to prove his milk "genuine" if he proves that it has not been tampered with. It is genuine, of course, in the sense that it is natural milk, taken from the cow, unadulterated and undiluted, but the purchasers, who suppose that they are buying milk of the standard prescribed by the Regulations, are certainly prejudiced. The farmer's defence is easy. Unless there has been deliberate adulteration or dilution, he can call witnesses to say the milk was never tampered with. He has only to explain to the magistrates that he had adopted a course of milking which prejudices the quality of milk sold to the purchaser, and he escapes any penalty for selling milk to the prejudice of the purchaser. In the recent Norfolk case the magistrates suggested to the farmer that, if the after part of a cows' milk was being left for her calf, the milk of that cow should not be placed on sale. In an earlier case it is believed that the bench suggested to another farmer who had employed this defence that he should consider the use of oilcake or other special food to improve the quality of the cow's milk so that the purchaser did not suffer. But these magisterial suggestions carry no compulsion, and meanwhile the deficient milk is presumably sold at full price and the purchaser is, in fact if not in law, prejudiced.

This point has been emphasised by repetition since yet another milk prosecution has recently failed on the same ground. The Ilfracombe Urban District

Council, on Sept. 20th, prosecuted a farmer who had supplied milk of which a sample showed 50 per cent. deficiency in milk-fat. The bench dismissed the case, though holding the deficiency established, because it was not proved that the milk had been tampered with. The analyst reported that the sample did not contain added water; the prosecution suggested that there had been an addition of scalded milk. This the farmer denied, though in cross-examination he admitted scalding his evening milk which he said he gave to his calves and pigs. The statement made on behalf of the defence, as summarised in the *North Devon Herald*, was that the farmer kept shorthorns and crossbreds which were not rich milkers. One cow had a calf running by her side; another had just had the calf taken from her. In such circumstances, it was frankly admitted, cows would hold their milk back and it was said to be well known that the fat was contained in the last of the milk. If farmers will agree in this admission they will appreciate the purchaser's point of view. Calves are entitled to their natural nourishment, but the law must somehow manage to prevent the nourishment of the calf interfering with that of invalids and children.

Chemist's Supposed Error: Doctor's Initials Illegible.

A year or so ago in an action for damages in the High Court there was a question of the proper proportion of a drug prescribed by a doctor, and its decision turned upon the correct deciphering of the figures in the prescription. This case, in which the plaintiff did not succeed, is indirectly recalled by a recent incident in which a Birmingham chemist is said to have sold in error pills containing one-fourth instead of one-fortieth of a grain of strychnine. The purchaser had presented a prescription dated 1921, but the doctor's initials could not be deciphered, and the chemist, on discovering his error, was unable to identify and warn the purchaser. The prescription bore the name of Mrs. Penn. In the hope of retrieving the pills and avoiding any unfortunate consequences of the error he believed himself to have committed, the chemist is understood to have sent telegrams to all persons named Penn in the Birmingham directory and to have invoked the aid of the police and the publicity of the press and of the British Broadcasting Company.

It was a case apparently of absence of mind, not of misunderstanding the specified proportions of drugs. The lay public, however, will doubtless connect the incident with its habitual pessimism as to the legibility and intelligibility of doctors' prescriptions. Custom has sanctioned the use of the doctor's initials just as, in the different field of marine insurance, custom has sanctioned the initialling of brokers' slips. Initials are accepted by the law courts as equivalent to full signature (if intended as such) in cases under the Wills Act or in the authentication of agreements within the Statute of Frauds. In connexion with the Dangerous Drugs Acts, where it may be important to identify the writer of a prescription, regulations have enacted that the prescription "must be in writing, must be dated and signed by the medical practitioner, registered dentist, or registered veterinary surgeon as the case may be, with his full name and address." Parliament has insisted upon clear handwriting in dealing with another vocation. The Pawnbrokers Act of 1872 obliges pledge-books and pawntickets to be written "in a fair and legible manner." There is probably no other example of an express statutory obligation of legibility, though there are plentiful occasions when the law requires written signatures to certificates, records, and other documents. A deliberately illegible signature might conceivably be held no signature at all.

THE LISTER CENTENARY.—The centenary of Lord Lister's birth falls on April 5th next year, and the Royal Faculty of Physicians and Surgeons of Glasgow, the Corporation of the City, the University, and other local public bodies are conferring as to the best method of celebrating the occasion.

THE HUMAN FACTOR IN INDUSTRY.

REPORT OF THE INDUSTRIAL FATIGUE RESEARCH BOARD.

REFERENCE was made in our issue of Sept. 18th to the contents of the latest report[1] of the Industrial Fatigue Research Board; some of the investigations into human activity brought together in the admirable analysis given of the Board's work since its inception call for more extended notice.

Hours of Labour.

The topical subject of hours of labour has received much attention; here is a matter of which Mr. W. L. Hichens rightly says[2] it is "to-day a subject of political controversy rather than of scientific inquiry; this is to be regretted. . . ." Many studies of output by the hour of each shift, by each shift of the day, and by each day of the week, have been made. Curves representing the results exhibit human activity as varying with the type of work performed; for physical work the curve rises as the muscles warm up, but falls as fatigue comes on; for monotonous work the curve gradually declines, to rise as the spell draws to an end. Maximum output, as exemplified by the curves for the best workers, is found associated with curves which rise steadily from hour to hour, from shift to shift, and from day to day. Output being the objective of industry, study of curves so that their shape may be improved by modifications in length of spells, and in number of hours worked, and by organised rest pauses, becomes a subject for scientific research. Thus inquiries in steel smelting, tin-plate mills, and glass-making, when contrasted with textile processes, show that increase in hourly output follows reduction in hours of work in proportion to the extent to which the process is manual rather than automatic. The optimum periods for work can clearly be determined by simpler and more accurate means than the hit-or-miss methods of present-day disputes.

Other Factors: Ventilation, Illumination.

Hours of work, however, can only refer to prevailing conditions of labour; if these latter are modified by introducing labour-saving devices, adequate ventilation or improved illumination, the problem alters. Here the subject of ventilation, including the temperature and humidity of the air, has been the subject of extended research following up the fundamental principles laid down by J. S. Haldane and L. Hill. Thereby the whole outlook on ventilation has been profoundly changed; the objective now is to produce the correct cooling power of the air, having regard to the work in progress, more for heavy work, less for sedentary work; no longer are chemical impurities and emanations called in to explain the ill-effects of stagnant air. Instances are quoted from a number of industries of output varying from 10 to 15 per cent. with variations in the cooling power of the air. Ventilation is for the most part under direct control; but the different standards found in such diverse places as laundries, potters' shops, shoe factories, and weaving sheds, indicate that this control is not well exerted. Moreover, ventilation should be at least as cooling for the head as for the feet; the reverse more usually prevails, but when correct adjustment is made comfort and output are increased. One of the most striking points throughout the investigations is that optimum conditions for output, whether by arrangement of hours or of environment, are found to coincide with a minimum of sickness and of accidents—in other words, the greater is the attention paid to the human factor in industry the

[1] Sixth Annual Report of the Industrial Fatigue Research Board to Dec. 31st, 1925. H.M. Stationery Office. 1926. Pp. 126. 3s.

[2] The Physical and Mental Effects of Fatigue in Modern Industry. By W. L. Hichens, Brit. Med. Jour., Sept. 11th, 1926, p. 480.

greater is the return, expressed in output, obtained for wages paid. Once this rule is appreciated, any influence which lessens lost time may be accepted as benefiting output; any influence which results in greater output may be accepted as beneficial to health. Thus the influence of illumination upon output—an influence which, though under direct control, is terribly neglected—is great; its influence on accidents can be measured; its influence on health is less easy to determine, but may reasonably be accepted; over 20 per cent. diminution in efficiency in weaving was found in the darker hours of winter days, while the weekly hourly output rose steadily from December to March.

Vocational Adaptation.

Even more fascinating than the results to be obtained by correct planning of hours and by perfecting the environment of work are those associated with fitting workers to their work and teaching them how to perform it; for example, improved movements at sweet-dipping produced 88 per cent. more output with less exertion, and reduced the time taken to polish table-forks by 61 per cent. 'Generally inefficient workers use actually more energy in accomplishing less than do efficient ones; thus one good metal-polisher produced 3·80 articles per minute for a total effort of 39·2, as against another who produced 2·54 articles for an effort of 71·3. Another matter of interest emerges; improvements in methods, in environment, or in hours, always benefit the less efficient workers most—i.e., they help most those who need help most, rather than thrust farther ahead those who have already outstripped their fellows. Since the bulk of the industrial population consists of average or poor workers, the increase in output, in health, and in contentment, to be obtained from adopting the principles which are thus being brought to light is hard to overestimate. From the health point of view alone this second industrial revolution, which is foreshadowed and has indeed already commenced, holds out prospects of hygienic and economic returns far greater and more lasting than all other schemes for betterment of the public health; the movement is advancing on power derived from scientific research.

We recommend perusal of this report, which is liberally illustrated, to everyone interested in the laws of health and activity, and congratulate the Board on work done in a difficult field, and their secretary on this excellent presentation of the whole.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

Sickness Insurance Clubs.

THE quarterly report of the Board of Health shows a steady diminution during the last six months in the number of persons insured against sickness in the compulsory Krankenkassa, or panel clubs. This is due partly to the emigration of labourers, but chiefly to the protracted and increasing unemployment of a large proportion of the working population. Every month the membership shows a fall of from 5000 to 7000, the largest reduction being noted amongst tailors and furriers, and the next amongst bootmakers and joiners. On the other hand, there has been an increase in membership of the compulsory Krankenkassa of the federal civil service and the municipal service, though this is more than outnumbered by the decrease in the other clubs. As regards the medical service in these organisations, there are two systems in operation. The institutes of the civil and municipal and railway servants are allowed to choose any doctor they like so long as he lives in the same district, whilst other institutes appoint their own doctors at a fixed monthly salary. Both doctors and patients prefer the free choice system, for it allows the patient to consult a doctor in whom he has faith and confidence, and it enables the medical man to make a better living, since he is paid according to the amount of work he does.

Difficulties of Vienna Medical Organisation.

Economic conditions in Vienna have taken a decidedly bad turn during the last few years, and the change has especially affected brain-workers. Members of the medical profession have suffered perhaps more than any, and it was in the attempt to improve their position that a body called the Economic Organisation of the Vienna Profession came into being a few years ago. This has managed to bring some kind of order into the relations between doctors and their patients, both private and club, but the general trend of evolution in this country is directed towards socialisation, and increasing numbers of the population are coming under the scope of some or other Krankenkassa. The Economic Organisation has of course been unable to prevent this—a fact which has caused a good deal of dissatisfaction amongst practitioners. When a few months ago the new board of the Organisation was elected the opposition against its recognised head, Dr. Stritzko, was remarkably successful, and recently he has found it necessary to resign his position as the profession has received a further serious blow which he was unable to avert. Two new gynæcological and obstetric hospitals with 240 beds have been opened in Vienna, where private patients, relations of members of the Krankenkassa, will be received for confinement—an arrangement which deprives the general practitioner of prospective patients. The resignation of Dr. Stritzko leaves the Organisation without a leader, and it is possible that it will fall to pieces and that the profession will thus lose a valuable means of defence. Every effort is, of course, being made to prevent such a lamentable event.

The Accident Hospital of Vienna.

A year or two ago the Union of Sickness Insurance Institutes of Austria, after a thorough study of the statistics of industrial accidents, founded a special hospital for accident cases amongst its members. In the report published by the union it was shown clearly that in the vast majority of such cases the actual losses of the institutes and their insured members——due to cost of treatment and loss of wages and time—could be reduced by 90 per cent. if immediate and adequate aid was provided to the victims of the accident. In the hospital, which is an absolutely independent corporation, all cases of industrial accidents, as well as all other accidents, are received, and a specially trained staff is entrusted with investigation into every single case, so as to get a clear insight into its technical and objective features. An operating theatre fitted with all appliances for orthopædic surgery, a hall for mechanotherapy and electrotherapy, and, of course, a first-class X ray outfit are to be found at the hospital, which is in the centre of the industrial district of the capital. Forty beds are provided for, but at present only half of this number are in use as the majority of the patients are out-patients. The staff consists of the chief surgeon, two assistants, one X ray specialist, two visiting physicians, and six nurses. The first report shows that this accident hospital has saved the insurance institutes about £18,000 in the first year.

Blood Comparison in Forensic Medicine.

In a paper presented to the Medico-legal Institute of Vienna recently Prof. H. Sperl and Prof. Werkgartner discussed the attitude of the law towards the newer methods of forensic medicine as practised in this country. Only reluctantly, as they pointed out, is any use made of methods which are now available to settle some important questions of paternity. The discovery of the four human blood-groups is now recognised in the law courts as a legitimate proof—in the negative, of course—and it is interesting to note that in all Austrian hospitals the history of the patient must henceforward contain a note of his blood-group. Recently quite a number of paternity suits have been

heard in which claims have been substantiated by this method and previous judgments have had to be reversed. Three times men who had been paying for the support of their alleged offspring for various periods have had their cases reopened and made good their denial of paternity, with the result that they had no more to pay for upkeep. It may also be remarked that personal identity can be established or strengthened by the examination of the blood-group, when dactyloscopy, for instance, is impossible. But a wider scope is open for the blood-test in the diagnosis of blood-stains. When such stains are found on clothing or on the body of a person in connexion with a suspected crime they are mostly attributed by the accused to epistaxis, or menstruation, or to some slight injury, or to domestic animals. The determination of the blood-group of the suspected individual will very often settle the question at once, but the forensic doctor must bear in mind that damage by external factors is sometimes very detrimental to the normal reaction of this test, which should therefore be left to experts.

Municipal Sanatorium for Tuberculosis.

Three years ago the City of Vienna opened a special sanatorium for tuberculosis, consisting of 18 pavilions, situated in a huge park, facing south, on the outskirts of the city. Up-to-date equipment, including laboratories, surgical and X ray apparatus, and facilities for recreation ensures the highest degree of efficiency in treatment. Women and children of 4–14 years are the only patients, and 500 of them can be accommodated; they remain for periods of not less than three and not more than six months. Two pavilions, for 40 patients each, contain mild cases of active tuberculosis without bacilli in the sputum; in another group of pavilions are housed 100 children with affected hilus glands and slight pulmonary disease; whilst a third group contains 80 beds for open and closed disease of mild and moderate severity, and 60 beds are devoted to cases with open cavernous disease and laryngeal tuberculosis. The chief agents in treatment are the open air, hydrotherapy, and natural or artificial sunlight; the normal diet contains 3000 calories, increased as required, and two pints of pure milk daily is the minimum dose for each patient. Pneumothorax and tuberculin treatment are, of course, used where indicated, also the laryngeal phototherapy of Wessely. The sputum is disinfected in a special department and so are the books read by the patients. The children are kept constantly in the open air and are taught by special school-teachers. Instruction in prophylaxis and hygiene is given to every inmate of the institute, which has had 3523 patients since May, 1923.

Public Health Services.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

THE following are some of the health statistics for 1925 for three countries.

Name of county.	Estimated mid-year population (R.-G.).	Birth-rate.	Death-rates per 1000 of the population.					Death-rates per 1000 births.	
			All causes.	Tuberculosis.	Cancer.	Resp. diseases with influenza.	Heart disease.	Infant mortality.	Maternal mort. from childbirth.
Derbyshire ..	611,700	20·4	11·4	0·79	0·99	2·3	1·4	78	3·8
Hampshire ..	405,800	17·8	11·1	0·77	1·40	1·5	1·8	52	4·3
East Sussex ..	260,100	13·6	12·0	0·79	1·72	1·7	2·1	44	2·7

Derbyshire.

Dr. W. M. Ash points out that the south-western and western portion of the county is undulating agricultural land, whilst the northern part is mountainous, and the eastern part is a coal-mining and industrial area. A great deal is being done to meet the shortage of houses, but much more is required. During 1925, 582 houses were erected under housing schemes and 1707 by private enterprise with State assistance. Groups of houses, built adjoining existing villages and sometimes doubling the population of these, create drainage difficulties. The sewage arrangements cannot bear the additional burden, and owing to the low rateable area before the new houses are erected the extension of the sewerage scheme cannot be undertaken. On the other hand, it is a costly matter to provide temporary cesspools which will be abolished when the sewage works are ultimately extended.

The county council has provided maternity homes at Ashbourne and Ripley, and has contracted with the Chesterfield Corporation for the use of four beds at the Chesterfield maternity home. During the last financial year 67 cases were admitted to the Ashbourne home at a net cost to the county of £335, whilst 124 cases were admitted to the Ripley home at a cost of £429. At the request of the Ministry of Agriculture samples of water from the rivers Trent, Derwent, and Erewash were taken for analysis on July 16th. The samples of the two former were satisfactory as regards dissolved oxygen, except the Derwent sample taken at Borrowash Bridge. The samples of the Erewash, on the other hand, came out badly. The Erewash is a small stream with numerous factories and sewage works in its winding course, and its gradient is slight. In these circumstances the stream becomes a series of sedimentation tanks washed out with each flush of storm water. There is no sign of fish life until near its junction with the Trent.

As Derbyshire is a large milk-producing county clean milk competitions are promoted wherever possible. A prize fund is organised, with subscriptions from various public bodies, private individuals, and big milk buyers. Surprise samples are taken of each competitor's milk and tested for dirt, for the presence of *B. coli*, and for rapidity of souring. Up to the present the large number of competitors has prevented bacteriological counts, tubercle inoculation tests, and examinations of the cows and cow-sheds, but it is hoped shortly to include all these procedures. At the show in connexion with each contest an exhibit shows the results of the tests; the creditable exhibits are labelled with the names of the competitors, the discreditable bear numbers only. After the Tuberculosis Order came into force on Sept. 1st, 1925, energetic action was taken to weed out advanced tuberculosis from the herds. Thus during the last four months of the year 553 cows were slaughtered, of which 454 had advanced tuberculosis and 91 had tuberculosis not so advanced. Dr. Ash emphasises the importance of having the cow-sheds disinfected after the removal of the tuberculous cows, and the farmers are recommended to adopt a system of disinfection similar to that advocated by Dr. W. G. Savage, of Somerset. The samples of milk taken under the Tuberculosis Order are tested by direct microscopic examination and by animal inoculation if the former is negative. Of 66 samples so examined 6 were found positive by direct examination and 5 by the inoculation test. In the ordinary examination of mixed milk samples for tubercle bacilli 28 out of 300 samples gave a positive result (9·3 per cent.).

The death-rate from cancer has been almost stationary in the county during the past ten years. Dr. Ash thinks that everyone knows the need for early operation, and that the reason why cases do not come to the surgeon early is because the condition is frequently symptomless. Propaganda has taught everyone that a lump in the breast may be cancer, but has not dispelled the fear of the knife,

and Dr. Ash cannot see how that is going to be done by lectures or pamphlets. The patient's own doctor is the right person to do it. At the same time maternity and child welfare centres are suitable places from which to spread knowledge of the seriousness of bleeding about the time of the menopause.

The number of known cases of encephalitis lethargica was 43, as compared with 84 in the previous year. Dr. Ash hopes that the provinces will follow the example of the Metropolitan Asylums Board, which has provided accommodation for 100 London children suffering from the after-effects of this disease. He is sanguine about the prospects of immunisation against scarlet fever, diphtheria, and measles.

Bretby Hall Orthopædic Hospital has just been completed for the reception of 50 cases of tuberculosis of bones and joints in children, and Dr. Ash thinks it should also be used for the accommodation of children crippled by non-tuberculous causes. He considers that the attitude of the public towards cripples in the past has been one of apathy, and that few people have tried to understand their problem. The first point is that a very large proportion of the cases of severe crippling could have been ameliorated if not entirely cured. The second is that only about 10 per cent. of cripples need be excluded from an ordinary competitive life if they are properly looked after and properly trained. The cripple wants to be able to live as normal a life as possible. The herding of cripples is degrading to them and stimulates a variety of objectionable public sympathy. It is well to remember, says Dr. Ash, that a defect such as the loss of a leg or arm is no bar to such sports or games as golf, tennis, swimming, motoring, and cycling. The need for higher education for cripples is pressing. All brain work, clerical work, private secretaryships, and domestic service can be quite well performed by cripples. On a recent visit to two large well-known hospitals for cripples Dr. Ash found no cripples employed on the staff. If this is the attitude of such institutions the general public will hardly be likely to employ them, and they will be allowed "to drift into the soul-destroying employments that have alone been open to them in the past."

Hampshire.

Dr. Robert A. Lyster states that it is becoming increasingly obvious that the combination of official public health work with general practice is to the detriment of both. There are two ways, he says, in which a whole-time officer, free from practice, can be secured by any health authority. Either a number of small health authorities may join to form a combined district, or any health authority may adopt the scheme of the Hampshire County Council and appoint as its medical officer an experienced member of the county staff. Since this second scheme was instituted 5 out of the 22 rural districts and 1 of the 16 urban districts have adopted it.

The county council has made arrangements for the reception of maternity cases by six institutions situated in various parts of the county. The growth in the number of maternity and child welfare centres has been very rapid. At the end of 1916 there were five such centres. At the present time there are 80 in the administrative area, all run on voluntary lines. There are 550 voluntary workers associated with the scheme, and it is estimated that two-tenths of the time of the ten assistant county medical officers is taken up with this work. Dr. Lyster considers that, owing to the demand for more centres and the offers of further voluntary help, it would be justifiable to increase the county medical staff in order to allocate the equivalent of the services of four whole-time medical officers to this work. Arrangements have been made with eye hospitals or departments at Southampton, Salisbury, Bournemouth, and Portsmouth for the admission of mother and child in cases of ophthalmia neonatorum. In order to save delay Dr. Lyster thinks this disease should be notified direct to the county medical officer of health. It has been found that some midwives are reluctant to call in medical aid in these cases, and the Ministry has advised that local supervisory authorities might refrain from exercising their power of recovery of the fee in this class of case, so that nothing shall stand in the way of the midwife seeking prompt medical aid. The whole question of the recovery of fees from the relatives for medical help called in by the midwife has been considered by the county council, and as a result an insurance scheme has been adopted. Under this scheme the expectant mother who engages a midwife may pay 5*s.* to the county medical officer. In return for this payment the county council will pay the fees of the medical man who may need to be called to the assistance of the midwife.

In certain areas in the county the nurses of district nursing associations have acted as school nurses, tuberculosis nurses, and health visitors. This arrangement has been found to have serious disadvantages and is now only in operation in a few parishes. The supervision of the midwives in the county is carried out by the superintendent of the County Nurses Association under the direction of the county medical officer, and a payment is made by the county council for these services.

Dr. Lyster is of opinion that notifications of tuberculosis should be made direct to the county council, the authority responsible for treating the disease. The Ministry of Health suggested that with a view to closer coöperation boards of guardians should appoint the tuberculosis officers as consultants to their institutions. Ten boards of guardians in Hampshire expressed their willingness to coöperate in the way suggested, but 11 did not see the necessity for the proposal. A comparison of the quinquennium 1921–25 with 1909–13 shows a considerable fall in the tuberculosis death-rate. Thus in the rural districts the rate from pulmonary tuberculosis has fallen from 0·71 to 0·62 per 1000, and the rate from all tuberculosis from 0·92 to 0·79; whilst in the urban district the rate from pulmonary has fallen from 0·75 to 0·68, and the rate from all forms from 0·99 to 0·85. Dr. Lyster thinks that it would be a good thing if the mental deficiency work were centred in the medical officer's department, instead of being divided, as at present, between the offices of the clerk, the medical officer, and a voluntary society. He suggests that it would be easy for him to obtain the assistance of many voluntary workers as for maternity and child welfare work.

Dr. Lyster expresses very decided opinions in favour of sterilisation in dealing with mental deficiency and in favour of the use of prophylactic outfits for the prevention of venereal disease, issued with "clear and concise instructions."

East Sussex.

Dr. A. G. R. Foulerton reports that during 1925 185 houses were provided under housing schemes and 1297 by private enterprise, and that about 694 houses were in course of construction at the close of the year. During the last five years the number of fully trained midwives has increased from 134 to 140, while the number of "bona fide" midwives has fallen from 20 to 5. Midwives attended 1805 of the births, and sent for medical aid in 211 cases before the child was born, and in 191 other cases, either for the mother or baby, after the confinement. In 513 further cases the midwife was engaged as a maternity nurse, a medical practitioner being present at the confinement. The total births numbered 3526. Arrangements have been made for the admission of maternity cases to institutions at Brighton, Crowborough, and Tunbridge Wells. Of the 59 cases thus admitted 17 were cases of difficult labour, 25 were cases in which antenatal observation had detected abnormalities, and 17 were admitted on account of unfavourable home conditions. At the close of the year there were 31 maternity and child welfare centres. The scheme for the coördination of the

county council's health nursing work with that of the East Sussex Nursing Federation continues to work very well. In parishes where there is no district nurse the five district nursing superintendents of the Federation carry out the routine visiting of infants and children under 5 years of age. The district superintendents also supervise the infant visiting work of the district nurses, give talks on infant care, &c., at the centres, and supervise the work of the 186 midwives practising in the county area. They also pay special visits to cases of ophthalmia neonatorum and give assistance in the medical inspection of school-children and at the tuberculosis dispensaries. Sixteen cases of encephalitis lethargica were notified, and there were ten deaths from this cause. At the close of the year the council was looking after 187 mentally defective persons, 67 of these being maintained either in certified institutions or approved workhouses, 13 under guardianship, and 107 under supervision in their own homes. The county council subsidises the East Sussex Voluntary Association for the Blind. Altogether 300 blind persons have been registered, and good progress has been made in providing for the more pressing needs of the necessitous blind in the county. The County Education Committee has provided education in special schools for all blind persons under the age of 16 who need it, and has also provided secondary or technical education for blind persons over the age of 16 who are likely to benefit.

Two interesting charts show the decline in the infant mortality and in the death-rate from pulmonary tuberculosis during recent years. Thus the infant mortality chart shows a steady decline from 100 at the beginning of the century to the present rate of 44, while the pulmonary tuberculosis rate shows a decline from 0·8 in 1909, interrupted by an increase during the war years, to the present figure of 0·6.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED SEPT. 25TH, 1926.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 121 (last week 120); scarlet fever, 1628; diphtheria, 1023; enteric fever, 103; pneumonia, 471; puerperal fever, 49; cerebro-spinal fever, 3; acute poliomyelitis, 41; acute polio-encephalitis, 3; encephalitis lethargica, 36; trench fever, 1; dysentery, 21; ophthalmia neonatorum, 115. There were no cases of cholera, plague, or typhus fever notified during the week. The reported cases of poliomyelitis have notably abated. The large majority of small-pox notifications come as before from the county of Durham.

Deaths.—In the aggregate of great towns, including London, there were no deaths from small-pox, 3 (0) from enteric fever, 1 (0) from measles, 3 (1) from scarlet fever, 27 (5) from whooping-cough, 29 (7) from diphtheria, 239 (58) from diarrhœa and enteritis under 2 years, and 23 (7) from influenza. The figures in parentheses are those for London itself. Since the issue of this return a death from small-pox has been returned from Willesden. A woman of 43 was infected from her husband lately returned from Paris, and died in the small-pox hospital at Kingsbury of a virulent form of the disease.

NEW SWANSEA HOSPITALS.—The foundation-stone was laid at Swansea last week of a new isolation hospital which will accommodate 118 patients and an administrative staff of about 40, at a cost of £80,000. On the same day took place the opening ceremony of a new maternity hospital containing two wards of five beds each and an isolation ward.

MANOR HOUSE ORTHOPÆDIC HOSPITAL. — This hospital at Golders Green has been presented with a sunray lamp department and a motor ambulance by the London General Omnibus Company's Employees' Friendly Society. The hospital, which is under the control of the Industrial Orthopædic Society, is stated to be the only institution of this kind managed and supported entirely by working men.

Correspondence.

"Audi alteram partem."

REFORM IN MIDWIFERY

To the Editor of THE LANCET.

SIR,—I unite with Prof. Theobald in the hope that midwifery practice in this country should be an example to the world. When he states that our official statistics are dreadful, every conscientious obstetrician will agree with him, but can he show me a country where they are as good? The Rotunda Hospital occupies a very small part of Ireland. The population of London alone is greater than the whole of Ireland. Are the catastrophes in Ireland less numerous than they are in London?

Prof. Theobald makes the startling statement: "There is one solution to the problem which *has not been given a fair trial* and that is an *improvement in the teaching of midwifery.*" (The italics are mine.) Had he been interested in obstetrics as long as I have, he would know that the teaching of our subject has improved out of all recognition during the past 20 years. He suggests that we should have several hospitals of the improved Rotunda type. They would need to be much improved to better the hospital conditions we already have. Every important city in England has its Rotunda. London is simply teeming with its Rotundas, of greater or smaller size. Each has its teachers who cannot be surpassed either as teachers or as clinicians. Herein the student is taught the importance of Epsom salts as a preventive of eclampsia. He is taught ad nauseam that 95 per cent. of women can and do deliver themselves. He learns that forceps extraction is a rarer operation than is appendicectomy in a surgical unit; and, above all, he is taught that in a lying-in clinic not more often than some half-dozen times in the year is it necessary to apply the forceps until the fœtal head can actually be seen at the vaginal orifice. These lessons the student takes with him into his practice; he never forgets them; but for reasons I shall mention later he is unable always to carry them out.

Let me touch as briefly as I can upon the practice of midwifery as the student sees it in hospital to-day. In the first place, he sees antenatal care—the very key to obstetrics. Here I join issue with Prof. Theobald when he says: "The antenatal clinics, with all their potentialities for good, may, in fact, be a source of danger, for they have made possible an enormous amount of meddlesome operative midwifery." Is he adverse to version in breech presentations? Does he deprecate our habit of examining a woman under an anæsthetic when we have the slightest doubt as to whether slight disproportion be present or not? Is he in favour of the scandalous practice of allowing a woman to have a trial labour and, this failing, to perform Cæsarean section? My point is that we should *know for certain* long before a woman goes into labour whether her baby will pass naturally through her pelvis or not. This knowledge can only be gained in the antenatal clinic, and when the student has grasped its importance, he has learnt volumes of midwifery. I should refer to this practice as precautionary rather than meddlesome.

Prof. Theobald is evidently a strong advocate of rectal examinations during labour. I had hoped that this ghost had been laid long ago. But even a student might well ask, if it is dangerous and unnecessary to examine per vaginam, where is the need to attack the rectum? Vaginal examinations should always be made twice during labour. First, when the membranes rupture to make sure that the cord has not prolapsed—a very important point, for I have seen this accident in several primiparous women with the head deep in the pelvis. And again, when the second stage has exceeded two hours in order to exclude persistent occipito-posterior presentation.

We cannot determine per abdomen if the occiput has rotated backwards. Per rectum we are able to feel sutures and fontanelles; but to rely on sutures and fontanelles to determine the exact position of the head is simply asking for trouble. We can be certain of a persistent occipito-posterior presentation only in one way, and that is by locating the ear. I have never been able to locate an ear per rectum.

I am not surprised that Prof. Theobald has discarded his Garden-of-Eden method of delivery, for its results are horrible. I have little greater praise for his modified Garden-of-Eden method with its 21 per cent. of perineal tears in primiparous women. Let me beg Prof. Theobald to try once more with properly directed support to the perineum. If he is then still dissatisfied, let him take a series of 100 primiparæ, and let him in each lift the head off the perineum with forceps under deep anæsthesia. His diminished percentage of tears will amaze him, and his morbidity will not be perceptibly increased; whilst at the same time he will be taking a golden opportunity of demonstrating to students what an essentially delicate operation a forceps extraction should be.

Finally, the tone of his communication leads me to suppose that he has had little, if any, experience of private practice, either specialist or general. Without it he cannot hope to trace the source of our trouble to rock bottom. With such experience we can well cease to wonder why so many catastrophes are admitted to hospital, and begin wondering why such catastrophes are not more numerous. The private doctor is driven from pillar to post by the patient's relatives. He receives an urgent summons, and on arrival he finds that the patient has been in labour for barely half an hour. On the staircase he trips over the husband who is seated there with his head between his knees, groaning and unshaven. In the bedroom he will be confronted by the mother-in-law who wants to know when something will be done. There, too, he will meet the woman from next door who is pouring scent on the victim's forehead and saturating the room with noxious vapours. He finally runs up against the patient's own mother who has come up from the country especially for the confinement, and who, having had children herself, of course "understands things." Under such circumstances is it to be wondered at that sometimes we do things contrary to our better judgment and contrary to what we teach and have been taught? No, Sir, the fault does not lie in our teaching. It is not altogether to be found in our hospital system, inadequate as this may be for our needs. The *fault is to be found in the patient's home*, and it matters not whether that home be rich or poor, in this country or in any other. I personally see no reason to hope for any marked improvement in our statistics until we have legislation rendering it illegal for a woman to be confined in the bosom of her family.

I am, Sir, yours faithfully,

ANDREW MCALLISTER.

Wimpole-street, W., Sept. 30th, 1926.

To the Editor of THE LANCET.

SIR,—Whilst appreciating the basic truth of Prof. Theobald's argument, that the results of midwifery in this country are bad, I think there is a possible danger in the general application of his conclusion that we must go back to the "Garden of Eden" method of delivery. It is true, Prof. Theobald states, that the solution of the problem "lies in a return to Nature and to better midwifery"; but the underlying notion is that a "return to Nature" should be the main factor. But Nature is a fickle mistress; she acts blindly, irrespective of consequences. From her point of view, if an individual dies or becomes pathologic, it does not matter; if a race is wiped out, she is unconcerned.

In innumerable diseases, Nature if left to herself leads to annihilation of the individual; Art comes in, and by opposing Nature, frequently prevents such disaster. I instance simply appendicitis; what can be more natural than this disease? It is true that if left to himself, the patient frequently recovers, but even in that case is not always continuously happy. In many other cases, non-interference results in speedy death of the patient. Can, then, we trust Nature in appendicitis, in pneumonia, in typhoid fever? Can the wet packs, the cooling of the body, by artful man—opposing Nature—be disregarded? Are, then, these diseases not natural? How, then, in pregnancy and parturition can the individual be left without concern to Nature?

Prof. Theobald, apart from the immediate deaths, assigns to bad midwifery two results: one is the result of sepsis, the other of trauma. He minimises the possibility of endogenous infection. He has tried in vain "to discover an authentic case of fatal sepsis that occurred in a woman who had never been vaginally examined." "The vast majority of morbid cases are made morbid by infection introduced from without." That may be true, but instances are not rare of some infection occurring without any vaginal examination. A patient of my own, unexamined by myself or by the attending nurse, developed on the tenth day a white leg. The child was born before my arrival, and the nurse I could trust. But plegmasia alba dolens, presumably, is due to infection. Prof. Theobald lays no stress on the effect of coitus late in pregnancy, supposed by some to assist delivery. Nor does he refer to the genesis of a subsequent prolapse after precipitate labour. The disabilities ensuing on parturition are not all due to sepsis, there is frequently left a weakness of the abdominal wall or a laceration of the pelvic floor musculature. To these he does not specifically refer, but the patients so affected form perhaps the greatest number of the patients attending the gynæcological out-patient departments of our hospitals.

Reform in midwifery certainly is necessary, but improvement will not occur by leaving the parturient woman to Nature. Reform will only ensue with the rise of a "better midwifery"; and a better midwifery will only result when a fuller, a more complete understanding of the "normal" becomes known.

I am, Sir, yours faithfully,

Rugby, Oct. 1st, 1926. R. H. PARAMORE.

POST-OPERATIVE TETANUS.

To the Editor of THE LANCET.

SIR,—After reading Dr. Dyke's article in the issue of Sept. 18th on post-operative tetanus with identification of the organism, I think it may be of interest to mention a somewhat similar case which occurred at the Royal Free Hospital this year.

The patient was a married woman aged 40, on whom a straightforward myomectomy was performed on March 30th. She had a normal convalescence until April 12th, when she complained of slight stiffness in the jaw on the right side. She had a carious tooth on that side and the symptoms were thought to be due to it until next day when the jaw became more stiff and later in the evening a definite spasmodic attack occurred. She then showed a risus sardonicus but rigidity of muscles was confined to those of the head and neck only. She was immediately given intravenous and intrathecal antitetanic serum and sedatives, but became comatose and died early in the morning of April 14th. On post-mortem examination offensive puriform fluid was found in the uterine wound from which the bacillus of tetanus was isolated. There were also present necroses in the liver and an acute tubular nephritis.

The case is interesting because, as with the patient mentioned by Dr. Dyke, there were so few symptoms—in fact only one spasmodic attack, and the patient died shortly after their onset. I am indebted to Prof. L. McIlroy and Prof. J. H. Dible for permission to write about this case.

I am, Sir, yours faithfully,

M. SALMOND,

Gynæcological Registrar, Royal Free Hospital.

Sept. 29th, 1926.

THE PASTEURISATION OF MILK.

To the Editor of THE LANCET.

SIR,—I am instructed to write to you on the following matter.

Dr. S. G. Moore, Medical Officer of Health, Huddersfield, in his letter on the pasteurisation of milk which appeared in your issue of Sept. 25th, referred to "Grade A Certified Milk."

As you know, the following grades of milk are sold under licence :—

Certified Milk.
Grade A (Tuberculin-tested) Milk.
Grade A Milk.
Grade A Pasteurised Milk.
Pasteurised Milk.

Certified Milk is the highest grade of raw milk while Grade A Milk is the lowest grade of raw milk recognised by the Ministry of Health.

Misquotations of this kind are very confusing to the public and a great drawback to the movement generally.

I am, Sir, yours faithfully,

H. E. MILES,
Secretary, The Certified Milk Producers' Association.

London, Sept. 30th, 1926.

SCOTLAND AND VENEREAL DISEASE.

To the Editor of THE LANCET.

SIR,—The excerpt on Syphilis and Gonorrhœa and Associated Diseases with special reference to their Nature and Treatment and the measures adopted in Scotland for their Prevention and Cure (recently reprinted from the 1925 Report of the Scottish Board of Health by H.M. Stationery Office), which was the subject of an article appearing in your issue of Sept. 25th under the heading A Pamphlet on Venereal Diseases, shows an astonishing omission in that prophylaxis is not even mentioned.

This is an interesting and remarkable publication and indicates a temporary local success for the "conspiracy of silence" in regard to the prevention of venereal disease by personal disinfection. Prophylaxis is not even mentioned in relation to syphilis, and as regards gonorrhœa paragraph 27 does not contain the word disinfection but is headed Prophylactic and Abortive Treatment of Gonorrhœa, and commences:—

"The efficacy of the prophylactic treatment of gonorrhœa is scarcely in question provided that the appropriate measures are taken within a short period of exposure to infection with reasonable care and with ordinary intelligence, but (outside the Services) such measures by almost universal consent are regarded as the concern of the individual rather than of the community."

Now Sir Leslie Mackenzie is the leading (and in 1923 was the only) medical member of the Scottish Board of Health, and in view of his published opinions in favour of education in the prevention of venereal disease by personal disinfection the omission of any reference to disinfection is astonishing. In 1922 two papers by Sir Leslie Mackenzie were published by the Scottish Committee of the National Council for Combating Venereal Disease, the first paper containing the following paragraph :—

"It is absurd to say that there is any danger in teaching every person capable of being taught that the venereal diseases are each of them due to a definitely known germ and that as long as the germ lies on the surface it can be destroyed with a mild disinfectant. . . . In teaching these facts we are teaching things so simple that any person can understand enough of them to realise the danger of spreading the diseases, *the easiness of the methods of preventing them*, and the difficulty of curing them once they are acquired."

The Scottish Board of Health was represented amongst the witnesses before the Committee of Inquiry on Venereal Disease, presided over by Lord Trevethin, by Sir Leslie Mackenzie and Dr. T. F. Dewar. Sir Leslie Mackenzie in paragraph 4 of his written evidence stated : "I put special stress on the measures for prevention," and in paragraph 13 said :—

"All instructions as to methods of ablution and self-disinfection should be regarded as an integral part of a course of genital cleanliness generally."

In his cross-examination on this written evidence Sir Leslie Mackenzie, in reply to Question 131, said :—

"My view would be that the balance of opinion would be rather in favour of direct preventive treatment. I look upon this mere matter of immediate self-disinfection as simply part and parcel of the teaching that would cover the method of destroying germs on the surface of the body. Probably the answer in the biggest industrial centres would be favourable to the methods. My opinion is that if it is a sound thing to do, then on general lines we begin to argue about it and the argument might go on for years, but ultimately the committees would adopt that line."

Colonel Fremantle, M.P., then asked (Q. 133): "If the power were given to chemists to put these prophylactics on sale you do not see any difficulty in the Scottish Board of Health issuing or approving instructions to be given away with them?" To which Sir Leslie Mackenzie replied: "No, I do not in the least, but, of course, there I am speaking for myself. I am a member of the Board and that is the view I should express. I am the only medical member of the Board as it happens."

Dr. Dewar, in para. 12 of his written evidence, says:

"Disinfectants such as are supplied to soldiers in barracks in Scotland might surely be sold or distributed along with appropriate instructions to the general public. Labels on the bottle and tube and accompanying instructions would make clear the method of use of the disinfectants. The instructions might be such as had received the prior approval of the central or local authority."

In cross-examination Dr. Menzies put the following question: "The objection (to disinfection depôts) is based on moral and not scientific grounds?" to which Dr. Dewar replied: "Yes, that is so," after which Lord Trevethin asked (Q. 33): "They allow their views on morality to overwhelm their views on humanity towards the individual sufferer from a disease which may cause his physical ruin?" to which Dr. Dewar replied: "I think it is because of the failure to appreciate the gravity of the disease. My experience is that since the real facts of the disease (a good picture of the disease in all its evils) have been presented to the population of Scotland they have expressed more or less their willingness to have it scientifically dealt with."

It would appear, therefore, that this latest official publication on venereal disease cannot be taken as representing expert medical opinion on the Scottish Board of Health or the opinion of informed members of the laity in Scotland.

I am, Sir, yours faithfully,

H. WANSEY BAYLY,
Hon. Secretary, Society for the Prevention of Venereal Disease.

Sept. 29th, 1926.

*** In this criticism of the reprint issued by the Scottish Board of Health on Venereal Diseases under Treatment, it is right to direct attention to the sentences dealing with "prophylactic treatment" of gonorrhœa and collating these with the personal opinions of the medical member of the Board and one of their medical officers. But the inference from those sentences is that the Board, if they have considered the matter at all, have not made any public announcement about it and hold that the present position is adequately indicated by the words "such measures by almost universal consent are regarded as the concern of the individual rather than of the community." These are highly generalised words, but as we read the Board's regulations affecting venereal disease it is open to a local authority to submit any proposals for personal prophylaxis, and, if any such proposals had been made, the Board's reply would, no doubt, have been available in a public form. The Scottish branch of the National Council of Social Hygiene carry on propaganda with public funds on the same footing as the Central Council. Attention may be drawn to the fact that the paragraph quoted from deals with "the prophylactic and abortive *treatment* of gonorrhœa," and that, as stated in the opening paragraph of the pamphlet, "the following descriptive summary of methods employed represents the actual practice of the centres now established. It is intended to impress on the public

the enormous importance of early and sustained treatment of venereal disease." The exposition is designed to place before the general practitioner a connected view of the treatment available and to be of use to all concerned in education and propaganda. Such a document, which is expressly confined to the work of the administrative institutions, cannot be criticised because it does not enter into detail on a complicated and difficult question like personal prophylaxis.—ED.L.

HELIOTHERAPY IN PULMONARY TUBERCULOSIS.

To the Editor of THE LANCET.

SIR,—Dr. C. B. Heald in his letter last week under the above heading asks whether, in the experience of your readers, the inverse square law is strictly applicable in the case of ultra-violet rays in clinical use. May I draw his attention to my experimental results in this connexion, reported in detail in THE LANCET of August 22nd, 1925 (p. 369). When the source of ultra-violet rays was a mercury lamp the inverse square law did not apply, since it is not a point-source. Calculations based on this law are thus liable to give variable doses, and might account for anomalous results.—I am, Sir, yours faithfully,

P. R. PEACOCK.

Cancer Research Laboratories, Middlesex Hosp., W., Oct. 3rd.

SANATORIUM TREATMENT OF TUBERCULOSIS.

To the Editor of THE LANCET.

SIR,—The fact that the presence or absence of tubercle bacilli has not been taken into consideration by Messrs Stocks and Karn in the grouping of the cases robs this investigation of a great deal of its value. Indeed, it introduces a very serious fallacy. Again, as Dr. Walters has pointed out, sanatorium treatment, to be of any permanent value, must be of long duration, certainly at least 12 months. To regard as "sanatorium treated" patients who have been in an institution for 15 days only seems absurd. The cases should be classified as "otherwise treated."

But one must admit that sanatorium treatment, especially if it is of short duration, has little or no effect on the ultimate progress of the cases discharged as improved or quiescent only. In them the mental factor comes into play; the patient loses heart, and with the first set-back he goes downhill rapidly. That is the reason why we prefer to cure one case rather than "patch up" 20, and when institutions are anxious to get "suitable cases" they have this in mind, and not mere statistical considerations as the authors suggest.—I am, Sir, yours faithfully,

Grampian Sanatorium, Kingussie, Oct. 4th. FELIX SAVY.

IS IT COVERING?

To the Editor of THE LANCET.

SIR,—Will you kindly give advice on a matter of medical ethics which may be of interest to others of your readers? A medical practitioner with a diploma entitling him to practise in the British colony in which it is granted, but which is not registrable in Great Britain, takes up a practice in a country where his diploma is registrable and where those on the British Medical Register also may practise. Is there any ethical or legal objection to a man with a registered diploma (in Great Britain) acting as assistant or as partner to the said practitioner? It is obviously needless for names of persons or places to be mentioned, so I sign myself LATITUDO.

*** The essence of covering, as defined in the Warning Notice of the G.M.C., consists in enabling an unqualified or unregistered person to engage in professional practice as if he were qualified or registered. The case related by our correspondent does not seem to come within this category, as both parties are legally entitled to practise under the medical laws of the country.—ED. L.

LONDON MEDICAL EXHIBITION

THIS exhibition opened at the Central Hall, Westminster, London, S.W., on Oct. 4th, and will close to-day (Friday), Oct. 8th, at 6.30 P.M. It is perhaps the largest of the series of exhibitions organised by British and Colonial druggists and the attendance has also been large. We give below a brief account of some of the more prominent stalls.

DRUGS AND PHARMACEUTICAL PREPARATIONS.

ALLEN AND HANBURYS, LTD. (37, Lombard-street, E.C., and 48, Wigmore-street, W.), showed a wide selection of pharmaceutical and dietetic preparations. Among new preparations was an "Acidophilus Culture" which is an improvement on the Acidophilus Jelly, being more stable, and Cellulose Flour for adding "bulk" material to diabetic preparations. Special attention was called to the Azoule Vacuum Extractors designed for taking samples of blood under conditions of sterility, and also to a stable form of sodium tetrabromphenolphthalein for X ray diagnosis of diseases of the gall-bladder. Prominence was also given to a toilet preparation, Odontase, a pleasant non-acid deodorant and germicidal dental cream, having for its basis magnesium hydroxide.—OPPENHEIMER, SON AND CO. (179, Queen Victoria-street, E.C.) exhibited in large variety their Bi-palatinoids and Palatinoids as well as Roboleine, a vitamin preparation, and a selection of various preparations for colloidal therapy.—BURROUGHS WELLCOME AND CO. (Snow Hill Buildings, E.C.). At this stall a wide range of products were exhibited. Grouped alongside photographs of the highly-magnified organisms responsible for certain diseases there were appropriate medicaments for dealing with the disorders, together with a selection of "Soloid" Microscopic Stains. A full range of "Tabloid" Animal Substances was shown, including "Tabloid" Thyroid Gland, "Tabloid" Mixed Glands, and "Tabloid" Parathyroid Gland. Attention was called to the Bismuth Salts of the firm, for which an exceptionally high standard of purity and physical and chemical uniformity is claimed. New drugs are "Avenyl" (a mercurial preparation soluble in hydnocarpus oil) and "Neostam." The former has been evolved for dealing with cases of syphilis complicated with leprosy. "Neostam" Stibamine Glucoside has been found of service in kala-azar, and in other conditions where tartar emetic has hitherto been used.—W. MARTINDALE (10, New Cavendish-street, W.). The following were prominently displayed: Methyl-Aspriodine, a new compound, containing the equivalent of 56·3 per cent. aspirin and 39·7 per cent. iodine, for inunction in rheumatic affections and as a local analgesic. "Auremetine," indicated in amœbic dysentery, being a combination of emetine, auramine, and iodine. "Mercurome," a valuable and potent antiseptic, of value in cystitis, pyelitis, and gonorrhœa. "Aspriodine," a compound combining the therapeutic properties of aspirin and iodine in stable combination, is said to be of value in rheumatic affections and arterio-sclerosis and wherever iodides have proved beneficial, being supplied in cachets or tablets. "Sedasprin" is the bromine analogue of aspriodine.

ENDOCRINES, LTD. (72, Wigmore-street, W.). At this stall there were exhibited a large number of glandular preparations, particular prominence being given to Anabolin and Hepatic Extract. The first-named is in tablet form for administration per os, and has been found active in some 70 per cent. of the cases in which it has been used. Hepatic Extract, which is available in ampoule form for intramuscular injection, is said to have a pr found influence on blood pressure and it is stated that clinical experience has shown that in the average case of functional high blood pressure the intramuscular injection of 1 c.cm. of the extract results in a reduction of from 30 to 50 mm. during the first day.—G. W. CARNRICK

Co. (Brooks and Warburton, 40/42, Lexington-street, W.) showed wide selection of gland products, and ARMOUR AND CO., LTD. (Queen's House, Kingsway), in addition to a large number of glandular products, showed Digestive Ferments of all kinds, such as Pepsin, Pancreatin, Trypsin, and Surgical Catgut Ligatures, as well as such specialties as Glycerine Extract of Red Bone Marrow, and Elixir of Enzymes —Among the large display of pharmaceutical preparations shown by the ANGLO-FRENCH DRUG CO., LTD. (238A, Gray's Inn-road, W.C.). Adrepatine, a pluriglandular compound for the treatment of hæmorrhoids, and Homovir, a gland compound in tablets for the treatment of impotency and presenility, were particularly noticeable.—BRITISH ORGANOTHERAPY CO., LTD. (22, Golden-square, W.), exhibited a large selection of organotherapeutical products, including Lymphoid Compound and Serum, for functional nervous disorders and degenerative nervous and mental conditions, respectively; Ovamammoid Compound for menstrual disorders and the disturbances of the menopause; Pancreatokinase for diabetes mellitus and glycosuria, and Enterostasin for chronic constipation, auto-intoxication, and similar conditions.—NUJOL LABORATORIES (Albert-street, Camden Town). The products of this firm are Nujol, an intestinal lubricant, Cream of Nujol with agar, designed to overcome the objection of some palates to plain Nujol, and Mistol, which is a balanced combination of menthol, camphor, and eucalyptol with a pure mineral oil. This latter can be used in an atomiser, and has been successfully used in the treatment of nasal catarrh.—SCHERING, LTD. (3, Lloyd's-avenue, E.C.), showed a camphor extracted from turpentine which compares in every respect and particularly in price with the ordinary form of this substance. This firm also exhibited Veramon, sedative and analgesic, which relieves pain without inducing sleep. It is said to be free from toxic or habit-forming effects, and, in most cases, forms a harmless substitute for morphia.—DESHELL LABORATORIES (1–3, Brixton-road, S.W.) showed Petrolagar, a perfect emulsion of medicinal liquid paraffin and agar-agar.

Among the most striking exhibits was that of H. R. NAPP, LTD. (3 and 4, Clement's Inn, W.C.), where definite progress in therapeutic products was shown in several directions. In particular, Saprovitan A and B may be noticed, a vital bacterial protein for intravenous injection, and Obiturin for determining whether death has actually taken place. This product on by a colour reaction distinguishes dead from living tissue. Another interesting exhibit by this firm was Normacol, a vegetable intestinal evacuant in granular form. A teaspoonful of this substance on passing into the bowel is said to swell to a bulk equalling the digested débris of 7 lb. of apples and 5 lb. of cauliflower, or 16 lb. of bread.—HOWARDS AND SONS (Ilford). The attractive display of this old-established house received much notice, among the articles particularly prominent being the Standard Æther, the Agotan brand of Phenylcinchoninic Acid, said to be indicated in rheumatism, gout, brachial neuritis, neuralgia, and an absolutely pure aspirin. Many fine chemicals were also shown, while attention was called to Howards' Hydrogen Peroxide, which is stable and has excellent keeping qualities.—GENATOSAN, LTD. (Loughborough, Leicestershire), while displaying their tonic food, Sanatogen and Genasprin, made a particular point of their vaccines for administration by the mouth.—HOFFMANN-LA ROCHE CHEMICAL WORKS, LTD. (7 and 8, Idol-lane, E.C.) showed a full range of various chemical preparations, including "Allonal," allyl-isopropyl-barbiturate of phenyl-dimethyl-dimethylamino-pyrazolon, a new synthetic, non-habit-forming hypnotic and analgesic, intended to relieve pain of all kinds and give sleep. "Omnopon" total opium alkaloids and "Omnopon" combinations. "Omnopon" (Roche) is a soluble opium derivative in which the whole of the opium alkaloids are presented in their naturally occurring proportions but in the form of soluble hydrochlorides. "Isacen," diacetyl-dihydroxyphenyl-isatine, is a tasteless, odourless, non-toxic laxative which is insoluble in water and dilute acids, acts only in an alkaline medium, is not absorbed, and has no action upon the kidneys. — CHAS. ZIMMERMANN AND CO. (9/10, St. Mary-at-Hill, E.C.). Besides calling special attention to Angiolymphe, a non-toxic vegetable composition indicated in tuberculosis as an intramuscular injection, made a special feature of the Dega brand of Lysol guaranteed to contain 50 per cent. cresols. While conforming to old standards in its qualities, this lysol has been considerably reduced in price. Other prominent exhibits of this firm were Idozan which presents iron in a readily assimilable form and does not cause constipation, Posterisan, a new vaccine therapy in the form of an ointment, and suppositories for the treatment of hæmorrhoids and allied conditions.—MENLEY AND JAMES, LTD. (Menley House, 64, Hatton Garden, E.C.), showed a therapeutically active iodine in an emollient base called Iodex, and made prominent Vitaminose, a chlorophyll vitamin compound intended to act as a food adjunct where the accessory food factor has been lost or impaired in preparation, culinary or mechanical.—C. J. HEWLETT AND SON, LTD. (35–42, Charlotte-street, and 83–85, Curtain-road, E.C.), included in their original preparations an antiseptic cream for eczema, abrasions and so forth, and a series of medicated skin lotions, Evapogens and Hormonigen, a combination of pluriglandular extracts for use in endocrine insufficiency.—MAY AND BAKER (Battersea, London, S.W.) called attention to Bistovol, bismuth acetylamino-oxyphenylarsonate, in ampoules of an oily suspension for intramuscular injection. This new preparation is for use in the treatment of syphilis. Sodium salt of N-phenylglycineamide-p-arsonic acid, Tryparsamide, for treatment of sleeping sickness (trypanosomiasis of man and mal de caderas of the horse) is claimed to have produced good results in general paralysis, tabes, and other forms of neurosyphilis. The sodium salt of theobromine-N-acetic acid—a new addition to diuretic medication—Mestarine, possessing marked advantages over theobromine and other derivatives of this compound by reason of its stability and ready solubility, was also exhibited by this firm.—SAVORY AND MOORE, LTD. (143, New Bond-street, W.), made a prominent exhibit of foods for infants and invalids and showed a wide selection of pharmaceutical preparations and drugs.—ANGIER CHEMICAL CO., LTD. (86, Clerkenwell-road, E.C.), exhibited their emulsion, petroleum with hypophosphites.—CROOKES LABORATORIES, BRITISH COLLOIDS, LTD. (22, Chenies-street, E.C.), showed a large selection of their original colloidal preparations and made a prominent feature of Collosol cod-liver oil. This takes the form of a 50 per cent. emulsion prepared with oil obtained from cod caught in home waters, the oil being extracted on board the fishing vessel, thus ensuring perfect freshness of the material. The preparation mixes with water, milk, or wine.—KAYLENE, LTD. (7, Mandeville-place, W.), showed various preparations of Kaylene (Colloidal Kaolin) for the treatment of chronic intestinal stasis, Colonol liquid paraffin possessing high viscosity at the temperature of the body, and a Swedish health bread, Spisbrod, which contains 100 per cent. of whole grain rye, while the DENVER CHEMICAL MANUFACTURING CO. (London, E.) exhibited their well-known antiseptic poultice, Antiphlogistine, which is indicated in deep-seated inflammatory and congestive conditions. —DIMOL LABORATORIES (40, Ludgate Hill, E.C.) demonstrated Dimol as a bactericide both in internal and external use. It is put up as a dentifrice, in the form of a syrup, pastilles, lavage powder, ointment, snuff, and dusting powder. Dimol as a bactericide is claimed to be 35 times more efficient than pure phenol.—BOOTS PURE DRUG COMPANY, LTD. (Nottingham), had a most attractive display of synthetic and medicinal chemicals, compressed tablets of drugs, solutions, surgical dressings, and sundries, and THE SEMPROLIN CO., LTD. (Carmex House, 18, Leather-lane, E.C.), displayed "Semprolin" Emulsion c.

Iodine (⅛ gr. in each fluid ounce), a preparation in which iodine is held in solution with even distribution.—PARKE, DAVIS AND CO. (50, Beak-street, W.) exhibited a new type of bacterial antigens, Immunogens, developed in the medical research laboratories of Parke, Davis and Co., and representing simple antigens almost free from toxin and bacterial cells. Attention was also drawn to Metagen and cod-liver oil emulsion—Metagen supplements the fat-soluble vitamin of cod-liver oil with the water-soluble vitamins of vegetable origin and provides a valuable remedy in cases of impaired nutrition.—NEWTON, CHAMBERS AND CO. (311, Gray's Inn-road) exhibited Izal disinfectant in various forms, and JEYES' SANITARY COMPOUNDS CO., LTD. (64, Cannon-street, E.C.), showed various preparations of Cyllin.

(*To be continued.*)

A FATAL CASE OF SMALL-POX IN WILLESDEN.

ON Sept. 29th Dr. G. F. Buchan (M.O.H., Willesden) was called in to see two cases (man and wife) by the medical practitioner in attendance. He found the man to be suffering from small-pox in a modified form and the woman to be suffering from hæmorrhagic small-pox. The cases were removed to the Willesden Small-pox Hospital the same day and the clinical features of these cases are described by Dr. A. G. Troup, medical superintendent, as follows:

Mr. M. F., aged 43 years. Vaccinated in infancy. Re-vaccinated in or about 1900.

Condition on admission to Hospital.—There were a few dry scabs on the hands, wrists, and feet, but the large majority of the lesions had completely healed, leaving no scar. It was not possible to differentiate accurately the site of all the pustules, but as far as could be ascertained these were as follows: three on face, a few on scalp, three on shoulders and neck, three on abdomen, two on flanks, four on arms, four on hands, one on right thigh, two on feet (dorsal surface).

The patient walked into the hospital and had nothing to complain of. On Oct. 2nd all scabs had completely disappeared, leaving a small scar in some instances.

Mrs. R. F., aged 44 years. Vaccinated in infancy.

Condition on admission to Hospital.—Temperature 97° F.; pulse 64. A hæmorrhagic rash was present on the trunk, arms, forearms, thighs, and legs, being most marked in the axillæ, groins, and wrists. The hæmorrhages took the form of petechiæ and ecchymoses, the latter form being chiefly present in the axillæ and groins. A diffuse erythema was present on the trunk and extremities, most marked on the shoulders posteriorly. The face was slightly bloated and there were no hæmorrhages present in this region. The patient had a characteristic fœtor and was quite conscious. The conjunctivæ were injected only. The tongue thickly furred and the mouth dry. Metrorrhagia was present. There were excruciating pains in the back, and the patient was in great distress. There were no papules, vesicles, or pustules present.

A hypodermic of morphia was given and the patient remained quiet for about five hours. She was seen again at 11 P.M. The hæmorrhages on the trunk and extremities had increased in size and number. The face and lips were a livid hue and the former was more markedly bloated. The pulse could not be felt. The patient was very restless and in a semi-conscious condition and died at 11.45 P.M.

Inquiries into the history of these cases showed that Mr. and Mrs. F. had come to London from Paris on Sept. 5th and had gone to a West-central hotel, from which hotel they moved to a West-end hotel on Sept. 7th. On Sept. 8th Mr. F. became ill with pains in the back, headache, severe prostration, and a temperature of 105° F., followed two days later by a rash first appearing on the scalp and face and subsequently on the arms and legs as described above. On Sept. 19th Mr. and Mrs. F. moved to a nursing home in Brondesbury, Kilburn. On Sept. 24th Mrs. F. became ill with severe pains in the back, followed by headache, vomiting, extreme restlessness, and sleeplessness. On Sept. 26th an erythematous rash appeared in the axillæ and groins, subsequently becoming punctate, and on Sept. 29th it was as above described.

Mr. and Mrs. F. were in Paris during the last fortnight in August and apparently it was during the last week of that month that Mr. F. was infected. It is reported that there is small-pox in Paris. Mr. F. had been vaccinated and re-vaccinated and took the disease in a modified form. He apparently infected Mrs. F., who developed small-pox of the virulent type. Mrs. F. had not been vaccinated since infancy.

The medical officers of health of surrounding districts in which the patients had resided or from which the patients had been visited were communicated with. All contacts were traced as far as possible and vaccination advised and the necessary disinfection was carried out. At the West-end hotel the medical officer of health, Dr. Charles Porter, ascertained that one of the staff had been ill for about 36 hours with suspicious symptoms and that another of the staff was ill in Lambeth. Both of these cases have subsequently been notified as small-pox.

The usual period of two days which elapses between the onset of the disease and the appearance of the rash gives an opportunity for preventive measures to be taken, as it enables the patients (deemed non-infectious during this period) to be isolated. All medical practitioners in Willesden have been notified of the circumstances of the occurrence of the disease and are actively coöperating with Dr. Buchan to prevent, as far as may be, any spread. Should no further cases arise Willesden will be free of danger of spread from the patients imported into the district probably about Oct. 13th and certainly by Oct. 20th.

Medical News.

BIOCHEMICAL SOCIETY.—The next meeting of the society is being held in the Biochemical Laboratory, Cambridge, on Saturday, Oct. 9th, at 2.45 P.M.

HARVEIAN SOCIETY.—A clinical meeting of the Harveian Society of London will be held at St. Mary's Hospital, Praed-street, London, W., on Thursday, Oct. 14th. Cases at 8 P.M.; chair to be taken at 8.30 P.M.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—The following demonstrations of specimens in the Museum will be given at 5 P.M. in the theatre of the College in Lincoln's Inn-fields. On Oct. 15th Sir Arthur Keith will show specimens of surgical and anatomical interest recently added to the Museum. On Oct. 22nd he will demonstrate the anatomy of the sacro-iliac region and its application to practice, and on Oct. 29th specimens illustrating disorders in the growth of bone. On Oct. 18th Mr. C. E. Shattock will demonstrate surgical conditions of lymphatic glands, and on Oct. 25th surgical conditions of blood-vessels, and on Nov. 1st scrotal tumours. The demonstrations are open to advanced students and medical practitioners.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—On Thursday, Oct. 14th, at 5 P.M., in the lecture room of the Medical Society of London, 11, Chandos-street, Cavendish-square, W., Sir Thomas Horder will give the opening lecture of a series on Emergencies in Medicine and Surgery. On Friday, Oct. 15th, at 5 P.M., at the Royal Westminster Ophthalmic Hospital, Mr. M. L. Hine will give a lecture-demonstration on the Red Eye and the Significance of Circumcorneal Injection. Both lecture and demonstration are open to members of the medical profession without fee. An intensive three weeks' course in laryngology, rhinology, and otology is in progress at the Central London Throat, Nose and Ear Hospital. Beginning on Oct. 18th there will be a combined course in Diseases of Children in which the Paddington Green, the Victoria Hospital, and the Children's Clinic are participating; this will include morning and afternoon sessions. On the same day a course in gynæcology starts at the Chelsea Hospital for Women, and an afternoon course in urology at St. Peter's Hospital, where there will be clinical work in the out-patient department, including cystoscopies, as well as daily lectures. A course of eight lecture-demonstrations is being given throughout the month at the London School of Tropical Medicine. Copies of all syllabuses, of the General Course programme, and of the *Post-Graduate Medical Journal* may be had from the Secretary of the Fellowship, at 1, Wimpole-street, London, W. 1.

HOSPITAL DINNERS.—The annual Old Students' Dinner was held in the Great Hall of *St. Bartholomew's Hospital* on Oct. 1st, when Mr. W. 1. Holmes Spicer presided over a large gathering. In proposing "The Hospital and Medical College" Mr. Spicer reviewed the doings of a year, in which the most important occurrence was the completion of the Queen Mary block of buildings for the housing of the nursing staff. The next most urgent work in prospect was the provision of an operating theatre block in connexion with the new surgical building, in order to avoid the perilous journey across the square of patients from ward to operating room and back. The provision of a department for paying patients was under consideration, for, said Mr. Spicer, even the most wealthy will soon not be able to command the best treatment elsewhere. During the year 120 students had obtained qualification to practise and the same number had joined the Medical College. The severe loss of Prof. Lovatt Evans from the College was a gain to University College, where he now occupied the Jodrell Chair of Physiology. The midwifery department was shortly to have a whole-time resident assistant physician-accoucheur; this appointment and the research laboratory attached to the new department in memory of Dr. Herbert Williamson raised the hope of forming at some future time a professional unit in the University of London. The biggest scheme in prospect was the removal of the school buildings to the other side of Giltspur-street at an estimated cost of £140,000. Lord Stanmore, who responded, added that it was hoped next year to begin to build a residential college, without which no medical school could remain efficient and progressive. Sir Percival Hartley proposed "Our Guests" in a speech full of apposite allusions, response being made by Sir William Beveridge, Vice-Chancellor of London University, who warmly acknowledged the great part played by the medical schools in the life of London University, while contending that a university still had functions as such to perform. The evening terminated with a racy speech from Dr. Owen Lankester, who proposed "The Chairman."

The annual dinner of the *St. George's Hospital Medical School* was held at the Hyde Park Hotel, Knightsbridge, S.W., on Oct. 1st, when Captain the Right Hon. C. C. Craig, M.P., Parliamentary Secretary to the Ministry of Pensions, presided over a large gathering. The dinner was arranged at separate tables so that friends could be sure of proximity, and there were only two speeches on the programme, one from the Chairman, a member of the house committee of the hospital, and one from Dr. Anthony Feiling, the Dean of the school, in reply. Captain Craig said that he spoke as a junior member of the important committee managing the domestic affairs of the hospital, and he testified to the spirit of keenness and loyalty which prevailed among all with whom he came into contact, while he considered that the exploits in the athletic world of the comparatively small school were particularly gratifying because they were accompanied by a high average of success in examinations. The Dean commenced by recording the retirement from the active staff of two of its most prominent members, Mr. H. S. Pendlebury, who no longer was residing in London, and Dr. Cyril Ogle, who, although he was now on the consultant staff, retained control over a certain number of beds, through the courtesy of the succeeding senior physician, and was thus able to continue the clinical teaching which so many generations of students had followed. Dr. Feiling said that the school was now full, as it was not considered that adequate accommodation could be found for more than 100 or 110 students, and while he noted that Dr. Graham Little, in his introductory address, had warned them that all medical schools might expect a decrease in entry, he had no apprehensions on this score. He gave the examination results to show the high average level of success in examinations which the students at St. George's had achieved during the past year. In response to allusions made both by Captain Craig and Dr. Feiling, Mr. G C. Dewes, the captain of the cricket eleven, which had secured the inter-hospital cup, spoke amusingly of the failure of statisticians to prophesy success for an eleven from a small school against schools of the size attached to St. Bartholomew's or Guy's; he attributed the good fortune of his team partly to their keenness and greatly to the generous action of Mrs. Tuke in providing the cricket ground for practice.

St. Mary's Hospital dinner was held at the Connaught Rooms on Oct. 4th, and attracted a large number of past and present students, including many who had been at the post-graduate course held at the hospital during the preceding three days. The Chairman, Dr. G. W. H. French, after referring to the death of Mr. Herbert Page, Mr. Clayton-Greene and other St. Mary's men, went on to speak of the affairs of the hospital and medical school, and commended the new appeal by which it is hoped to equip two new operating theatres, increase the number of beds, and improve the accommodation for nurses. He quoted examination results in which 54 per cent. of St. Mary's students had been successful, as compared with 29 per cent. of all the students entering; from this he deduced that the present students were working as hard as they were playing. Mr. A. R. Prideaux, chairman of the Hospital Board, said that it had caused the Board much anxiety that the hospital should have had to turn away urgent cases. The 44 new beds which they hoped to provide would enable them to reserve some for emergencies. The King Edward Hospital Fund had offered the hospital £4000 on condition that another £20,000 was raised before the end of the year. The hospital's reply had been to raise £20,000 in five weeks, the extra cost of this appeal being not more than £150. Efforts were being made to secure additional land beside the hospital for purposes of extension. Dr. C. M. Wilson, Dean of the Medical School, said that the entry of students at medical schools always increased after a war. In 1919–20 the entry at St. Mary's had risen to 45, just as it rose after the South African War. In 1921, however, it had fallen again to 31, and this return to pre-war level seemed to mark a crisis in the school's affairs, especially as expenses nowadays were four times as great as formerly. Clinical units had been started and during the past year the entry at St. Mary's had risen again to 45, whereas in other schools it had fallen. On the previous Saturday, he was glad to report, three Rugby fifteens had taken the field. Sir William Willcox, in proposing the toast of "The Chairman," said that no better man could be found to represent the general practitioner, who was the backbone of the profession and reached a higher general level in this than in any other country.

The annual dinner of past and present students and friends of the *Middlesex Hospital* was held at the Savoy Hotel on Oct. 1st. The Chairman, Mr. Victor Bonney, spoke of the new annexe of the hospital, which is now in full working order and is enabling the institution to carry on during the process of rebuilding with only a small diminution in the full numbers of beds for in-patients. Having referred in felicitous terms to the work done for the hospital and school by Sir Henry Morris, Sir Richard Douglas Powell, and Mr. Stephen Paget, whose deaths have saddened the past year, the speaker dwelt on the great schemes in progress. The site for the new Institute of Biochemistry is now clear, and it is hoped that the next 12 months will see the completion of this building, which the Middlesex owes to the generosity of Mr. Samuel A. Courtauld. Replying to the toast of "The Middlesex Hospital and Medical School," Mr. Courtauld alluded to his personal experience of the enormous importance of true scientific research in industry, and expressed his certitude that the selection and support of capable biochemical workers would lead to important advances in medical knowledge. Mr. Eric Pearce Gould, Dean of the Medical School, referred to the generosity of the old medical students of the school who have contributed more than £1000 towards the reconstruction fund. Sir Walter Fletcher, responding to the toast of "The Guests," expressed the admiration which he, as secretary of the Medical Research Council, felt for the constant output of valuable work from the research departments of the hospital. It was, he said, a pleasure to afford as much help as possible to an institution so admirably equipped and organised.

The annual dinner of *Westminster Hospital* students was held at the Royal Adelaide Gallery on Oct. 1st. The Chairman, Mr. William Turner, won applause by an announcement that he would not encourage long speeches, and the evening's entertainment was chiefly musical, the songs and recitations chosen being variously appropriate to the ages of the audience. In a short statement on the position of the medical school, the Dean, Dr. A. S. Woodwark, expressed himself as more than satisfied with its progress. The entry of students during the past year had been higher than during the previous 25, and he was confident that the numbers would increase still further. In this, its ninety-third year, the school was going ahead in every direction. That its facilities were being appreciated was evident from the fact that the War Office had chosen it as the place of post-graduate instruction for officers of the Royal Army Medical Corps, and there was no doubt that students would be attracted by the equipment of new laboratories, made possible by the John Burford Carlill Endowment; these had recently been opened by the Vice-Chancellor of the University of London. Dr. Coombes and Mr. R. Greene replied to the Chairman's toast of "Past and Present Students," Dr. Coombes recalling the days when visitors came and paid 1*s.* at the porter's lodge because they mistook the hospital for the Royal Aquarium. Dr. Brittan Gill proposed the Chairman's health and he briefly responded.

MEDICAL FREEMAN OF ANDOVER.—At a special meeting of the Andover Town Council on Oct. 1st the Honorary Freedom of the Borough was conferred upon Dr. E. A. Farr in recognition of his services as Mayor for three successive years and of the part he has taken in bringing to a successful issue the scheme for the new War Memorial Hospital, of which he is senior medical officer.

ROYAL DENTAL HOSPITAL OF LONDON: *School of Dental Surgery.*—The scholarships, prizes, and certificates awarded during the past academic year were presented on Oct. 4th by Sir Humphry Rolleston at the hospital. Mr. H. Stobie, the Dean, said that the number of students and pupils in the school is at present 135. Examination results for the year were as follows: Of 95 candidates for finals 53 passed; of 50 candidates for mechanics 37 passed; the corresponding figures for metallurgy being 47 and 33 and for dental anatomy 93 and 69. Sir Humphry Rolleston delivered an address on the Relation of Dental and General Hospital Schools. Discussing the desirability of union of dental and general hospital schools, he said that there were good reasons in favour of their close association. From the point of view of the patients there was much to be gained by consultation and an obvious advantage was the provision of beds for patients undergoing extensive extractions and operations on the jaws. In the interests of the progress of dental science correlation with other departments was important, and again the value to dental students of seeing the medical and surgical complications of dental disease was incalculable. The introduction of a compulsory medical qualification for all dentists was not practical politics at present, though it might be in the future. Meanwhile the more progressive institutions for the training of dentists were likely to ally themselves with general medical schools. For this reason Sir Humphry Rolleston suggested that the Royal Dental Hospital would also sooner or later be driven to unite with a general teaching hospital. Doctors would naturally send their sons and daughters who intend to take up dentistry to the dental schools attached to their old teaching hospitals, and dentists educated at dental schools which had remained in splendid isolation would sooner or later follow suit. This possibility was worthy of serious consideration. The recent amalgamation of the Rugby football clubs of the Royal Dental and Charing Cross Hospitals might be prophetic. Mr. Norman G. Bennett moved a vote of thanks to the speaker.

EDINBURGH ROYAL INFIRMARY.—On Oct. 9th the new radiological department is to be opened by the Duke of York.

ROYAL SOCIETY OF MEDICINE.—As we have already announced, the annual dinner of this society will be held on Thursday, Nov. 18th, at 7.30 for 8 P.M., at the Hotel Victoria, Northumberland-avenue, when the Prime Minister has consented to be the society's guest of honour if his duties permit. Those who desire to be present are asked to apply on the proper form at an early date, particularly as it may become necessary to limit the number of private guests. No places can be reserved after Nov. 11th.

ROYAL SANITARY INSTITUTE.—A sessional meeting will be held at the Town Hall, Dover, on Friday, Oct. 22nd, at 7.30 P.M., when Prof. H. R. Kenwood will take the chair at discussions on Diphtheria Immunisation (Dr. Joseph Cates and Major F. E. Roberts, R.A.M.C.) and Port Sanitary Administration (Dr. A. B. McMaster). Visits to local places of interest and a reception by the mayor have been arranged for the afternoon. Those proposing to attend should notify Dr. McMaster, at Brook House, Dover, by Oct. 15th.

CHELSEA CLINICAL SOCIETY.—The annual dinner of this society will be held at the Cafe Royal, Regent-street, on Tuesday, Oct. 26th, at 7 for 7.30 P.M., Dr. Ernest Young in the chair. Amongst those who hope to be present are Lord Carson, the Dean of St. Paul's, and Sir Arthur Conan-Doyle. Members are invited to bring guests, and application for tickets should be made to Mr. A. R. Thompson, 45, Queen Anne-street, W. 1. Further arrangements for the session include discussions on Encephalitis Lethargica on Nov. 16th, and Septicæmia on Dec. 21st.

MEDICAL SOCIETY OF LONDON.—The programme of the first half of the next session of this society has now been issued. The annual general meeting will be held on Monday, Oct. 11th, at 8 P.M., after which the Fothergillian Medal will be presented to Sir Gowland Hopkins, F.R.S., and the annual oration will be delivered by Sir Berkeley Moynihan on Before and After Operation. Amongst other arrangements are a clinical evening on Oct. 25th at 8 P.M., and discussions on Sternal Pain (Dr. John Parkinson and Mr. A. J. Walton, Nov. 8th, 8.30 P.M.), on the Treatment and Diagnosis of Bronchiectasis (Dr. Clive Riviere and Mr. J. E. Roberts, Nov. 22nd, 8.30 P.M.), and on the Exanthemata (Dr. J. D. Rolleston and Dr. R. A. O'Brien, Dec. 13th, 8.30 P.M.). The Lloyd Roberts lecture will be delivered on Friday, Nov. 19th, at 5 P.M., at the Royal College of Physicians by Dean Inge, whilst the Lettsomian lectures are arranged for Monday, Feb. 21st, and Wednesday, March 9th, at 9 P.M., the subject being the Surgery of the Spinal Cord and Membranes, and the lecturer Mr. Donald J. Armour.

EUGENICS EDUCATION SOCIETY.—This society has changed its address to 20, Grosvenor-gardens, London, S.W. 1; Tel.: Sloane 2086.

WEST LONDON HOSPITAL CHAPEL.—By the generosity of Mr. Dan Mason a chapel has been added to this hospital. It is dedicated to St. Michael and All Angels, and has just been consecrated by the Bishop of Kensington.

VICTORIA UNIVERSITY OF MANCHESTER.—The following candidates have been successful in the undermentioned parts of the examination for the Diploma in Public Health. Part I.: Mary Evans; Part II.: John Rigby and H. M. Turner.

GLASGOW CHILD WELFARE CENTRE.—On Oct. 5th Major Walter Elliot, Under-Secretary of State for Scotland and Vice-President of the Scottish Board of Health, opened a new child welfare centre in Springburn, Glasgow. This is a new unit in the large Glasgow scheme for child welfare

BRUSSELS UNIVERSITY MEDICAL GRADUATES' ASSOCIATION.—This association, which was formed 46 years ago in order to safeguard the interests of all medical graduates of the University of Brussels, will hold its annual dinner on Oct. 28th at the Langham Hotel, Langham-place, London, W., at 7.30 P.M. Any graduates in this country who have not received a notice of the dinner or a recently published list of members and rules of the association, are asked to communicate with the hon. secretary, Dr. A. D. Woolf, at 11, Chandos-street, Cavendish-square, London, W. 1.

MEDICAL TOUR OF THE FRENCH RIVIERA.—The Société Médicale du Littoral Méditerranéen has organised a visit of doctors from different countries to the French Riviera, in order to acquaint them with the therapeutic resources of this region. The tour will take place between Dec. 15th and 24th, and will include visits to Hyères, St. Raphael, Cannes, Grasse, Venice, Nice, Beaulieu, Mentone, Monte Carlo, and Monaco. The programme and full particulars can be had from the Office Français du Tourisme, 56, Haymarket, London, S.W.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MONDAY, Oct. 11th.—5 P.M., WAR. Presidential Address: Group-Captain Henry Cooper, R.A.F.: The Wider Aspect of Service Medical Work.

TUESDAY.—5 P.M., THERAPEUTICS AND PHARMACOLOGY. Presidential Address: Dr. George Graham: The Treatment of Gout.

THURSDAY.—8.30 P.M., NEUROLOGY. Presidential Address: Sir James Purves-Stewart: Intracranial Tumours and Errors in their Diagnosis.

FRIDAY.—8 P.M., OBSTETRICS AND GYNÆCOLOGY. Specimens: Prof. Louise McIlroy: (1) a Case of Bilateral Malignant Disease of the Ovary in a Girl of 18; (2) a Case of Endometrioma of the Ovary. Presidential Address by Dr. Archibald Donald. Paper: Mr. Victor Bonney: The Outcome of 214 Radical Abdominal Operations for Carcinoma of the Cervix Performed Five or more Years Ago. The paper will be discussed by Dr. Lockyer, Prof. Fletcher Shaw, Mr. Rivett, Mr. Gray, and others.—8.30 P.M., ELECTRO-THERAPEUTICS. Presidential Address: Dr. G. B. Batten.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.

MONDAY, Oct. 11th.—8 P.M., Annual General Meeting. 8.45 P.M., Presentation of the Fothergillian Gold Medal to Prof. Sir Gowland Hopkins. 9 P.M., Sir Berkeley Moynihan: Annual Oration, "Before and After Operation." Conversazione.

SOCIETY FOR THE STUDY OF INEBRIETY (Rooms of the Medical Society of London, 11, Chandos-street, Cavendish-square, London, W.).

TUESDAY, Oct. 12th.—4 P.M., Dr. J. D. Rolleston: Alcoholism in Classical Antiquity.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, Oct. 11th, to SATURDAY, Oct. 16th.—FELLOWSHIP OF MEDICINE (Special Lecture), Medical Society of London, 11, Chandos-street, Cavendish-square, W., Thurs., Oct. 14th, 5 P.M., Sir Thomas Horder on Some Emergencies in General Medicine.—ROYAL WESTMINSTER OPHTHALMIC HOSPITAL, Charing Cross, W.C. Special demonstration on The Red Eye and the

Significance of Circumcorneal Injection by Mr. M. L. Hine on Friday, Oct. 15th, at 5 P.M. The lecture and demonstration are free to members of the profession.—CENTRAL LONDON THROAT, NOSE AND EAR HOSPITAL, Gray's Inn-road, W.C., Intensive course in Clinical Laryngology, Rhinology, and Otology. Operative class also.—LONDON SCHOOL OF TROPICAL MEDICINE, Endsleigh-gardens, N.W. Tues. and Thurs., 2 P.M., clinical demonstration. Further information from the Secretary of the Fellowship of Medicine.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.
MONDAY, Oct. 11th.—2 P.M., Special Demonstration of Medical Cases in the Wards: Dr. A. J. Whiting. 2.30 P.M. to 5 P.M., Medical, Surgical, and Gynæcological Clinics. Operations.
TUESDAY.—2.30 P.M. to 5 P.M., Medical, Surgical, Throat, Nose, and Ear Clinics. Operations.
WEDNESDAY.—2.30 P.M. to 5 P.M., Medical Skin and Eye Clinics: Operations.
THURSDAY.—2 P.M., Special Demonstration of Surgical Cases: Mr. H. W. Carson. 2.30 P.M. to 5 P.M., Medical, Surgical, and Ear, Nose, and Throat Clinics. Operations.
FRIDAY.—2.30 P.M. to 5 P.M., Surgical, Medical, and Children's Diseases Clinics. Operations.

POST-GRADUATE HOSTEL, Imperial Hotel, Russell-square, W.C.
TUESDAY, Oct. 12th.—9 P.M., Mr. J. P. Lockhart-Mummery: The Prognosis of Rectal Cancer.
THURSDAY.—9 P.M., Mr. R. E. Elmslie: Internal Derangement of the Knee-joint.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.
TUESDAY, Oct. 12th.—5 P.M., Dr. S. E. Dore: Physiology of the Skin.
THURSDAY, Oct. 14th.—5 P.M., Dr. J. M. H. MacLeod: Morphology and Histopathology of Elementary Lesions.

NATIONAL HOSPITAL, Queen-square, Bloomsbury, W.C.
MONDAY, Oct. 11th.—2 P.M., Dr. Hinds Howell: Out-patient Clinic. 3.30 P.M., Dr. Adie: Disseminated Sclerosis.
TUESDAY.—2 P.M., Dr. Walshe: Out-patient Clinic. 3.30 P.M., Dr. Bernard Hart: The Psychoneuroses.
THURSDAY.—2 P.M., Dr. Kinnier Wilson: Out-patient Clinic. 3.30 P.M., Dr. Martin: Epilepsy.
FRIDAY.—2 P.M., Dr. Adie: Out-patient Clinic. 3.30 P.M., Dr. Symonds: The Pathogenesis and Treatment of Cerebral Vascular Disease.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street.
THURSDAY, Oct. 14th.—4 P.M., Dr. Nabarro: Meningitis in Children.

ST. MARGARET'S HOSPITAL FOR WOMEN, Acomb-street Whitworth Park, Manchester.
WEDNESDAY, Oct. 13th.—4 P.M., Dr. H. R. Clarke: Pitfalls in Medical Practice.

ANCOATS HOSPITAL POST-GRADUATE COURSE.
THURSDAY, Oct. 14th.—4.15 P.M., Mr. Harry Platt: Treatment of Common Injuries.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE COURSE.
TUESDAY, Oct. 12th.—4.15 P.M., Dr. W. Fletcher Shaw: Chronic Pain in the Lower Abdomen.
FRIDAY.—4.15 P.M., Prof. J. Kay Jamieson: Lymphatic System in Relation to Cancer.

JAMES MACKENZIE INSTITUTE FOR CLINICAL RESEARCH, St. Andrews.
TUESDAY, Oct. 12th.—4 P.M., Prof. MacWilliam: High Blood Pressure from the Physiological Aspect. Discussion to be opened by Prof. Herring.

Appointments.

GRANT, J. W. GEARY, F.R.C.S. Eng., has been appointed Honorary Surgeon to the Cardiff Royal Infirmary.
JOE, A., M.D. Edin., D.P.H., Medical Superintendent, North-Western Hospital, Hampstead.
PAGE, C. MAX, M.B., M.S. Lond., F.R.C.S. Eng., Consulting Surgeon; and RUSSELL, H. B., M.D. Lond., Deputy Physician.
Certifying Surgeons under the Factory and Workshop Acts: LOGIE, J. M., M.B., C.M. Glasg. (Burntisland, Fife); YOUNG, J., M.B., Ch.B. Glasg. (Ormskirk, Lancaster).
Scotland Yard: CASSIDY, M.A., M.D. Camb., F.R.C.P. Lond., Physician and Chief Medical Officer.

Vacancies.

For further information refer to the advertisement columns.

Barbados General Hospital.—Senior Res. S. £300.
Belfast, Queen's University.—J. C. White Lectureship in Bacteriology. £600.
Bethlem Hospital, Lambeth-road, S.E.—Non.-Res. H.P. £25 per quarter.
Birmingham, Queen's Hospital.—Asst. Obstet. Officer. £50.
Bloomsbury Dispensary, 12, Bloomsbury-street, W.C.—Surg. 100 guineas.
Bristol Mental Hospital, Fishponds.—Third Asst. M.O. £350.
Bristol Royal Infirmary.—Hon. Gynæcological Reg., Hon. Ophth. Reg., and Asst. Anæsthetist.
Cambridge, Addenbrooke's Hospital.—H.P. At rate of £130.
Cardiff, Royal Infirmary.—Hon. Asst. S.
Chichester, West Sussex County Mental Hospital.—Med. Supt. £900.
Croydon County Borough.—Asst. M.O. £600.
Derbyshire Royal Infirmary, Derby.—Two H.S.'s and Asst. H.S. and Cas. O. Each at rate of £150.
East London Hospital for Children and Disp. for Women, Shadwell, E.—Res. M.O. £200. H.P. and Cas. O. At rate of £125.
Gloucestershire Royal Infirmary and Eye Institution, Gloucester.—Sen. H.S. At rate of £175.
Guildford, Royal Surrey County Hospital.—H.S. £150.
Hampstead General and North-West London Hospital, Haverstock-hill, N.W.—H.P. and Cas. M.O. Each at rate of £100.
Hospital for Consumption and Diseases of the Chest, Brompton, S.W.—Pathologist, &c. £750. Also H.P. £50 for six months.
Leeds, St. James' Hospital, Beckett-street.—Chief M.O. £1000
Manchester, St. Mary's Hospital.—Two H.S.'s. Each at rate of £50.
Metropolitan Hospital, Kingsland-road, E.—Sen. H.P., Sen. H.S., Jun. H.P., Jun. H.S., and two Cas. O.'s. All at rate of £100.
Middlesex Hospital, W.—Phys. and Asst. Phys.
Nordrach-on-Mendip Sanatorium.—A.M.O.
Otago Hospital Board, Dunedin, N.Z.—Med. Supt. £1000.
Otago University and Dunedin Hospital, New Zealand.—Medical Tutor and Sen. Res. M.O. Also Sen. Res. Surg. O. Each £400.
Portsmouth Royal Hospital.—Third H.S. and Cas. O. At rate of £150 and £100 respectively.
Queen's Hospital for Children, Hackney-road, Bethnal Green, E.—Cas. O. At rate of £100.
Royal Chest Hospital, City-road, E.C.—Res. M.O. At rate of £150. H.P. At rate of £100, and Anæsthetist. 10 guineas.
Royal National Orthopædic Hospital, 234, Great Portland-street, W.—Surg. Reg. 100 guineas.
Royal Northern Hospital, Holloway, N.—H.S. and H.P. Each at rate of £70.
Salisbury General Infirmary.—H.S. £150.
Staffordshire General Infirmary, Stafford.—H.S. At rate of £200.
Victoria Hospital for Children, Tite-street, Chelsea, S.W.—Cas. O. and Reg. £150.
Walsall General Hospital.—Sen. H.S. and Jun. H.S. At rate of £200 and £125 respectively.
West End Hospital for Nervous Diseases, Welbeck-street, W.—Hon. Reg.
The Chief Inspector of Factories announces a vacant appointment for a certifying Factory Surgeon at Tunbridge Wells (Kent).

Births, Marriages, and Deaths.

BIRTHS.

DAVIES.—On Sept. 27th, at The Gables, Chipping Campden, Glos., the wife of Dr. J. C. Davies, of a daughter.
SIMPSON.—On Oct. 2nd, the wife of J. Watson Simpson, M.B., Ch.B., D.P.H., of Snitterfield, near Stratford-on-Avon, of a daughter.

MARRIAGES.

DENNEHY—MANSON.—On Sept. 23rd, at St. Edmund's Church, Bury St. Edmunds, Dr. John J. Dennehy, to Blanche Veronica Vivian Manson, daughter of the late Captain E. E. M. D. Manson, South Lancs Regt., and of Mrs. Manson, of North-gate, Bury St. Edmunds.
RANNIE—BROOKE.—On Oct. 2nd, at Holy Trinity, Sloane-street, S.W., James Rannie, M.D., to Mary Elaine (Molly), elder daughter of Mr. and Mrs. Norman Brooke, of Sidmouth, Devon.
SLATER—HOWE.—On Wednesday, Sept. 29th, at Rochester Cathedral, John McDonald S. Slater, M.B., F.R.C.S. Edin., elder son of Mr. and Mrs. W. H. Slater, of Murrayfield, Edinburgh, to Dorothy Rose, only daughter of Mr. and Mrs. T. E. Howe, of "The Clearing," Maidstone-road, Chatham.
STUBBS—HINTON.—On Sept. 30th, at St. Michael's Church, Shepton Beauchamp, Somerset, Major John William Cotter Stubbs, D.S.O., M.C., R.A.M.C., to Mabel, eldest daughter of the late Lieut.-Colonel C. B. Hinton, C.M.G., Royal Artillery, and of Mrs. Hinton.
WILSON—REES.—On Sept. 28th, at Roupell Park Church, S.W., Archibald Wilson, O.B.E., M.C., M.B., Ch.B., to Gwendolen, youngest daughter of the late Rev. Allen Rees, LL.D., of Ipswich, and Mrs. Rees, Streatham Hill, S.W.

DEATHS.

BALL.—On Oct. 2nd, at Stert-street, Abingdon, Berks, James Barry Ball, M.D., F.R.C.P., aged 77.
BARNETT.—On Oct. 2nd, at Hilgrove-road, South Hampstead, Lawrence Barnett, M.D.
EWART.—On Sept. 29th, at his residence, North-street, Chichester, David Ewart, M.D., F.R.C.S. Edin., O.B.E.
KING-LEWIS.—On Sept. 29th, at St. Lawrence, Jersey, James King-Lewis, M.R.C.S., L.S.A., formerly of Westbury, Salop, aged 65.
MORROW.—On Oct. 2nd, at the Middlesex Hospital, of acute lymphatic leucæmia, David Morrow, M.R.C.S., L.R.C.P., L.S.A., of Harley-street, W.
PERRIN.—On Oct. 3rd, at Temple-square, Aylesbury, Thomas Perrin, M.D., M.S. Lond., F.R.C.S. Eng.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

THE NERVOUS CHILD

Being an Abstract of Lectures given at the Teachers' Vacation Course at Bingley, Yorkshire, on August 9th and 10th, 1926,

BY MILLAIS CULPIN, M.D. LOND., F.R.C.S. ENG.
LECTURER ON PSYCHONEUROSES, LONDON HOSPITAL MEDICAL COLLEGE.

AN important point of view is involved in the title of these lectures. Nerves are things that we can see and handle, can put on a plate or under a microscope, and disease of them is called nervous disease; but the word "nervous" in this title is used in a totally different sense—a sense which Dr. Johnson, in a letter to Mrs. Thrale, described as incorrect. The usage of years has not made it more correct, but the misuse is so established that we must accept it, whilst bearing in mind that it involves not only inaccuracy but, to some extent, a wrong attitude.

We take for granted that man knows little of what goes on inside his body and is not responsible for such internal happenings, but we have assumed that we know all that takes place in our minds, and we cannot admit that our thoughts or feelings or emotional reactions are not wittingly determined by ourselves. Hence, when these processes are disturbed we maintain our assumption by placing the disturbances in the category of bodily events, and advertisements of patent medicines "for the nerves" indicate the commercial possibilities of the belief that to be nervous means to have one's nerves physically deranged. But there is a dim suspicion that all is not so simple; to be highly strung is almost commendable, to have a nervous breakdown or suffer from neurasthenia is pardonable, but by some subtlety of etymology to be neurotic involves moral censure. In these conditions we know nothing of any change in nerve tissue, though hypotheses which soon lead into the deep sea of metaphysics are common enough. The word nervous survives in the sense used in the title because it avoids, not metaphysics, but the admission that we are dealing with a problem not of body but of mind.

Perhaps the admission hurts our pride. Each one of us, nervous or not, likes to feel "I am the captain of my soul." But another reason for avoiding it is the difficulty of the problems thus created. As long as the nervous patient, his friends, and his doctor can meet the situation by a rest-cure or something to be taken three times a day—well, the situation is being met and no difficult problems are raised. Although a medical woman recently published a paper showing that one-fourth of all long illnesses amongst school-teachers fall into the group of "nervous breakdowns," and although a similar proportion exists in other occupations, yet no medical student at his qualifying examination expects to be asked about these disorders. If the problem of nervous troubles is thus avoided you may understand my diffidence in approaching that part of it—the nervous child—which contains the core of its difficulties.

What is Nervousness?

Whilst not assuming an antithesis between body and mind, I must indicate what appears to be our attitude to these conceptions. We picture the body as a set of mechanisms—bones, muscles, nerves, glands, and other tissues—which we can study in detail. But when we consider the behaviour of the individual we note various thoughts, feelings, and desires which we recognise in ourselves and assume in others. These processes we conceive as mind, though you will soon see that this conception must be enlarged. In a nervous person we must assume an impulse or inhibition that leads to behaviour ill-fitting to the situation; we often note, also, an unduly emotional state. Moreover, we may make a grievous error if we assume that the cause of the impulse, of the inhibition, or the emotion is known to the subject.

Mal-adapted behaviour and an apparently uncalled-for emotion are, then, characteristic of nervousness.

The Physical Side.

There are well-known bodily concomitants of emotion. Take, for example, that of fear. The pale face, rapid pulse, and altered breathing, the dry mouth, the tremor or immobility indicate a disturbance of bodily processes, and there are less obvious changes in the secretions of internal organs. A good deal can be said for the Lange-James theory that our perception of all these changes constitutes what we feel and describe as emotion.

But we are too ready to consider emotion as an acute experience. In the child who suffers from a continued state of apprehension there may be a general physical ill-being with digestive or circulatory troubles, loss of appetite, poor sleep, and such like. The resulting inability to cope with current difficulties sets up a vicious circle which demands attention both to the mental and the physical state.

The nervous parent has nervous children, not by heredity but by infection. Yet there is an inborn temperament related to physical development and especially to the development of certain glands. To take extremes as examples we know the cretin, stunted in mental and physical growth, who reacts in a marvellous way to the administration of extracts of the missing thyroid gland. Disease of the pituitary gland may lead to obesity and mental retardation, and other glandular disturbances may lead to premature or delayed sexual development. There is, within normal limits, a wide range of temperamental differences, and if any individual becomes nervous the kind of nervous reaction will be determined by his temperament.

Nervousness can produce physical symptoms, but the sequence may be mistaken, so that the nervousness is regarded as caused by the physical trouble. Bodily troubles *can* initiate nervous symptoms, but I regard that process as a setting free of possibilities already present. Sleepy sickness is followed by nervous symptoms and even serious delinquency, and in this disease there are actual changes in the brain, but, since all the symptoms are known apart from any brain change, their appearance may be regarded as the result of the removal of the control of the higher centres, which allows potential troubles to become manifest. A general malaise, like that induced by infected tonsils, may cause a child to give way to tendencies which better health would enable him to control. I am, however, sceptical about errors of refraction producing nervous symptoms. Defective sight may have an indirect influence, but I regard eyestrain as a bogy, and the only justification for condemning a child to wear glasses is the fact that he cannot see properly without them.

A continued state of apprehension can produce circulatory changes as shown by cold and discoloured hands, rapid fatigue, and in adolescents by faintings, breathlessness, and other symptoms that lead to the suspicion of heart weakness. Loss of appetite with nausea or actual vomiting can also arise. What is cause and what effect may be a difficult and important question. The symptoms, arising from a difficulty of adjustment, may be used as a means of escaping that difficulty and thereby become perpetuated. The *aim* of a neurosis, at any age, is often obvious to the outsider but hidden from those closely concerned with the patient. Even a mental symptom like night terrors serves the purpose of enforcing the presence of a loved person. Everyone may not find it easy to imagine night terrors maintained by such an aim, but I present the idea as a possibility.

There is a relation between an emotional state and posture. Note the child who stands with drooped shoulders, excessively curved lumbar spine, and protruding abdomen, and perhaps shows the faint blueness of the hands that marks a poor circulation. That child finds life's burdens heavy, is over-dependent, and often querulous. The stance is, I believe, the precursor of a condition found in the nervous adult and associated with a sagging of the abdominal contents which leads to diagnoses of movable kidney, dropped stomach, and the like.

Dietetic dislikes carry a good deal of emotion and are linked with bodily reactions. Though I would not advise forcing upon the child an article of diet which arouses repugnance, yet such dislikes should be discouraged; moreover, an adult who takes pride in his or her—it is generally her—dietary idiosyncrasies probably has other idiosyncrasies which make her unsuitable for a position in which children may find example and influence.

Squint, stammering, and left-handedness are related. They occur in families and a "cure" of left-handedness is often followed by a stammer. Stammer is recognised as a nervous sign, squint has been noted to occur in children of unstable disposition, but left-handedness has been regarded as a manifestation of original sin—in the child, that is—for the left-handed adult has been welcome in the team since the time when among the children of Benjamin "there were seven hundred chosen men left-handed; every one could sling stones at a hair's breadth and not miss." The left-hander is in general self-assured, obstinate in a quiet way, yet not given to futile opposition, and has a desire for justice for himself and others; he goes his own road with as little fuss as possible. Whether this results from the left-handedness or whether the left-handedness is adopted as a symbol of independence, I do not venture to say. Apart from scriptural authority, we have an inkling of the traits of the left-hander. In choosing as a companion in a tight corner between a stammerer, a squinter, and a left-hander most people would choose the last. For an example of grim determination I commend the biblical story of Ehud, "a man left-handed."

The familial occurrence of the three affections indicates differing reactions to parental authority or even to family

tradition. A left-handed father may be so kindly, calmly, and persistently obstinate that reaction in the children is inevitable.

Theory of the Unconscious.

This theory is essential to the understanding of nervous reactions, and we may approach it by looking at a phenomenon which, because it is universal, we accept as not calling for explanation. This is the loss of memory, or amnesia, for our early years. We say that we were too young to remember, but the memory of a child of 3 can easily go back for a year or more. The child has no defect of memory; it is we who are too old to remember.

There is a well-known saying attributed to Ignatius Loyola: "Give me the child to the age of 7 and I care not who has him afterwards." The foundations of character are laid in those early years, and all of us are influenced by mental processes once conscious, but now inaccessible to ordinary introspection. What has happened to those memories? We might regard character traits as determined by particular combinations of nerve elements and the continued use of certain nerve paths. This is a simple hypothesis, but it is not helpful except so far as it offers an explanation of training. Let us take an example. A girl of 10 breaks out into unreasonable anger on being denied any trivial thing, but quickly recovers and offers whatever atonement is within her power. Plainly a neurotic reaction. The parents, set to trace its first appearance, recall that at the suckling stage the maternal supply was deficient and the baby did not thrive. She always turned away from the breast with an outbreak of angry crying, and when put on artificial food repeated the action at the end of each feed, though by all the canons of child-rearing she had had enough. This reaction has persisted in unbroken sequence to the age of 10 and may become a permanent character trait. One might call it a conditioned reflex and speculate about nerve paths and nerve patterns. But, knowing how we blot out early memories, what support have we for denying that memory in some form independent of words has been at work throughout the history just given? Unless we suppose a radical discontinuity a change from reflex mechanism in the nursing child to a different world of memory a few months later, it seems reasonable that there was some mental link between the first reaction and those that occurred later, a link of the nature of memory.

Now let us make a fresh start from another direction. Doctors who treated men suffering from those mental breakdowns called shell-shock found in them losses of memory for emotional events, chiefly of war; these losses could be restored, and the restoration aided in the removal of symptoms which often symbolised in curious ways the incidents forgotten. Sometimes there were discovered losses of memory going back to the time of childhood.

These observations could best be summarised by the theory of the unconscious, first practically employed by Freud in regard to psycho-analysis. His early methods resembled those employed in reviving war memories, and experience of war cases has led to further work which has compelled many of us, almost against our will, to accept Freud's ideas to a greater or less degree. Chief among them is the conception of infantile memories which, with many later additions, remain in the *unconscious*, not as inert impressions but as a source of impulse and emotion that govern our likes and dislikes throughout life. Now you can see how the problem of the nervous child is the core of the problem of nervousness.

In this the emotional relationship of the child to the parents is an important element. It is in many respects composed of opposites—the desire to remain the child and to grow up, to obey and to disobey, to be dominant and to be submissive; these are further complicated by the fact that repression into the unconscious is constantly taking place. With growth the attitude to the parent is transferred to other objects and many mishaps may occur. Lack of affection may lead to a "sour grape" feeling towards the world at large, and a common type of nervous adult is one incapable of giving affection and, therefore, of receiving it, the situation being met by some of the many ways in which the nervous patient can use the neurosis to tyrannise over the personal environment. Too great an attachment can be as disastrous. Everyone is familiar with the mother's darling, and from my war experience I concluded that he generally suffered from shell-shock. A certain amount of "standing up to" the father is a developmental necessity, and the mother's darling escaping this need fails to stand up to anything. The same result may follow the influence of a drunken, bullying, or overpowering father.

Sex Instruction.

We must return to the fact that fear is important in the nervousness of the child, and here it has required the courage of the psycho-analysts to speak plainly of one source of that fear. They are accused of emphasising sex; but our reactions to that emphasis are so emotional as to remove themselves from the intellectual sphere and take their place among the results of unconscious influences which, in this case, are easily traced. The taboo against mention of sex has been mitigated of late years, but it still falls with full force upon the child, just as it fell upon us in our impressionable amnesic years with the result that we have accepted it as unquestionable.

Not only is the child assumed to have no knowledge of sex and reproduction, but knowledge must at all costs be withheld. The result is within the experience of many of us. There is set up a barrier behind which the child builds up a mass of speculation and distorted actuality, whilst we on the adult side of the barrier pretend that nothing is happening. Any sign the child may show of interest or knowledge is met with an emotional disapproval which quickly repairs any breach. What nervous development takes place behind the barrier depends upon the temperament of the child.

Here let me digress and briefly sketch temperamental types. Two extremes have always been known, the doer and the thinker, and these Jung calls the introvert and extrovert. The extrovert is in close contact with the world—he *feels* himself in contact and gives it no thought. Easily adjusted to his environment, he accepts the current view, has no doubts about the truth of his beliefs—though he can easily alter them—and, conforming to the social standard, is free from embarrassment or fear of criticism. The introvert has to make contact by thinking, he finds adjustment an effort, is critical of current views and his own, and tends to be overscrupulous and fearful of what people may think of him.

Their reactions to the taboo are quite different. The extrovert child will accept the situation, will find pleasure in the search for illicit knowledge, will enjoy the nasty jest, and, generally speaking, will come through unharmed. And on reaching adult life he will again adjust to the social standard and resolutely withhold information from his offspring.

The introvert cannot accept the taboo without thought; he decides—as far as he can decide—that, since the omniscient parents head him off with prevarications or untruths, there must be something dreadful in this knowledge, and something dreadful might happen if he pried into it. Hence he will turn a deaf ear to the talk of his fellows; he turns a deaf ear, but the talk sinks into the unconscious to plague him with a sense of sin. The impulse of curiosity is strong and he is compelled to build up phantasies about the mystery; these phantasies likewise are repressed with any knowledge he may have gained. And when he becomes a parent he will know that his children should be better instructed; but he will not have the courage to instruct them, for the introvert at any age has his fears stimulated by the sex taboo. (I think we are justified in using this designation. A taboo in its original or South Sea Island sense was essentially irrational and was supported by public opinion, whilst its violation was expected to bring about the most direful social results.)

How secretive behaviour can influence the child may be illustrated by an experience of my own, which I have recorded elsewhere,[1] as follows:—

> A girl of six, usually truthful, lost a playmate by death; the parents, for reasons which seemed good to them, withheld this information, but friends discussed it before her in hushed voices in the trustful idea that she would not understand. Then a pet animal of hers died and, looking at the dead body, she said to her father: "Isn't it strange that when an animal dies it's here, but when a human dies it isn't here?" The father guessed that she was speculating about the death of her young friend and decided that she must be told the truth. Her mother gave her the news, which was met with a burst of tears and "She can't be dead, mummy, she was too young." But after a minute's thought she repeated the same words about the dead animal—to her mother, of course, this time. The father, confirmed in his suspicion, asked her later if she knew of the death of her playmate before her mother told her. This question was met with "Of course I didn't, how could I? Why do you ask me?" and the father's attempt to explain why he asked only brought forth more denials. It would have been impossible to discover what fantastic ideas about death were present in the mind of the child, who, recognising that knowledge of a mysterious happening was hidden from her, retired into her own world and refused to part with its secrets. The analysis of adults, however, shows that such incidents form the constituents of unconscious phantasies which may attain great importance in later life.

Let us consider what was imposed upon this child. When the death was discussed she was obliged to act the lie of not understanding, and in doing that she had to keep considerable emotion in check. Then she had to defend herself against the implication of having acted several lies, and did it by telling fresh ones. In regard to the sex taboo many—indeed, most—children are under the necessity of maintaining a similar false standard of thought and action, though we must remember that all is not on the plane of full consciousness. Moreover, when the parent is the owner of knowledge

[1] The Nervous Patient. Lewis and Co. Pp. 28.

which must not be sought, and which the child is yet impelled to seek, the fear of the forbidden becomes displaced upon the parent. This may explain those cases in which a parent free from any trace of harshness is, nevertheless, an object of the child's fear or timidity.

It may be said that I am beating the air, that the modern parent agrees that the child should be saved from the pitfalls of ignorance. There are, indeed, books with such titles as "What a boy of 12 ought to know," and it has been proposed that upon school-teachers should fall the task of instruction. But before the taboo is crowned by an initiation ceremony does anyone try to find out what the boy of 12 really knows? To try is to fail. "Give me the child to the age of 7" said Loyola, and for more than seven years the boy—and all this applies, of course, to the girl as well—has been influenced by false ideas and false values. The matter is not one of knowledge versus ignorance, but of the emotion with which the subject is invested. Those, for instance, who feel that they would not dare to discuss this subject before other people as I am doing had better avoid any attempt to deal with the problem in the child until they have dealt with their own; then they may find that there is no problem except within themselves.

There is no difficulty in stating conventions and having them accepted. That certain subjects are not spoken of in general talk is a proposition that needs no emotional emphasis, and the principle of avoiding such emphasis should be widely applied. The more emotional we make a prohibition the more we drive into the unconscious whatever tendency there may be to violate that prohibition, and what is driven into the unconscious is placed beyond conscious control. Take, for example, our emotional attitude to swear-words. No one goes through life without hearing them, and in adult neurotics words regarded as obscene often thrust themselves into consciousness as obsessive thoughts. Or consider the delight the small child takes in strutting about naked; I think that delight is a matter of observation. Suffered for a time, it soon meets with the taboo against exposure, enforced with unexplained emotional emphasis. One result is the dream most of us have experienced of being insufficiently clothed in public, a dream often of nightmare intensity. Another result is the persistence in the unconscious of a tendency to expose the body or to play Peeping Tom with the opposite of extreme modesty in consciousness. Incidents caused by the out-cropping of this unconscious tendency are, unfortunately, common and often have serious effects upon young people, effects which are in direct proportion to the emotional emphasis placed upon the prohibition.

The period of infantile amnesia is occupied largely by the enforcement of social prohibitions. Please do not credit me with attacking these—they have to be accepted. But whilst enforcing them as "things that are not done" we can avoid the attitude of the savage towards those who would violate the tribal taboo. That attitude is not felt to be necessary in matters of great difficulty. The habit of wiping muddy boots upon the door-mat, for example, may need disciplinary measures for its cultivation, but, however severe the discipline, we do not invest a lapse with the feelings of horror and awe that we attach to violations of taboo. Hence, however painful may have been the acquirement of the door-mat habit, it rarely serves as a basis for nervous symptoms.

The Masturbation Difficulty.

I should not be doing my duty if I avoided the subject of masturbation. A physician monk named Tissot once wrote a volume in which many physical ills were ascribed to this practice, and his statements have been copied through the centuries, whilst only of late years have physicians had the courage to admit that we know of no physical ills that result from it. It does not produce insanity or consumption, nor does it per se induce the nervous troubles we are concerned with. It is so common that the race would be in a bad way if a tithe of the evils ascribed to it really existed. Great remorse is frequently felt often associated with persistence of the habit, and on account of the many superstitions about it the sufferer who seeks help is likely to have that remorse intensified. At the risk of incurring censure I will state plainly that when I have to deal with this remorse my first advice takes the form of "Don't worry, most people have gone through it," for the removal of the remorse is the best road to the dropping of the habit. The ill-effect lies first and foremost in the guilt feeling, then in the fact that it is a most selfish action and turns inwards mental energies that ought to flow outwards. Moreover, the psychic trends that may be established in connexion with it—in the shape of perverted phantasies and the like—may stand in the way of a healthy mental attitude in later life; but the phantasies are not caused by the habit, though they become linked with it.

I have seen cases in which preventive measures have been disastrous. One of a young man whose serious neurosis hung upon his being trussed up at night in a weird instrument designed to prevent the habit; another in a girl who could not learn, though her intelligence was good. At my only interview with her she quickly told her story, with the pathetic excuse "I only do it when I am nervy." But her mother watched her day and night in her efforts to stop the habit, to which she attributed the troubles really caused by her own treatment of the situation.

The impulse to the act may be successfully controlled; when repressed and denied conscious recognition it may show itself (as described by Maurice Healy in his book "Mental Conflict and Misconduct") in delinquencies like truancy, kleptomania, and such a bizarre symptom as the impulse to leap into an unattended cart and drive away.

The Handling of the Nervous Child.

Emotion is infective, and the fussy parent or teacher can easily induce fear in the child; in fact, almost any neurotic symptom can be passed on. A lack of affection, whether real or only fancied, can lead to the "sour grapes" feeling which makes the child reject all attempts at friendly relations. Truculence and outbreaks of temper have to be checked, but if we have grasped the conception that the child may not be aware of the *why* of his own reactions we shall not resort to retributive punishment but rather avoid the stimuli that produce them and make as easy as possible the passing of the storm. But please do not assume that a belief in unconscious motivation means the rejection of measures that encourage the child to behave as he should. Impulses not consistent with the demands of reality should be overcome, whatever their origin. We all have them.

School life, by removing the child from the surroundings in which nervousness has arisen, is often the best for him, and for an only child the rough and tumble of school life is a necessity. Faults in emotional development are likely to crowd upon him. The neurotic demands that a child makes upon the parent can rarely be fulfilled at school, and these demands show themselves in extraordinary guise. I know an only child who was a model of obedience in circumstances when obedience might have been difficult. But her constipation was the plague of her mother's life. At last she went to boarding school, taking with her a packet of senna leaves which were to be handed over to the school authorities with full directions for their administration. The leaves were burnt and the child's intestinal functions were left to look after themselves, which they did quite efficiently. The girl doubtlessly derived gratification from the symptom which, by its obstinacy, counterbalanced the obedience she so readily gave in other directions.

But for one type of child the rough and tumble may be most distressing. The school-child is mainly an extrovert—introversion increases with age—and the extreme introvert may have an unhappy time. The extrovert despises the other, who fears and yet envies him. The introvert—fearful, over-conscientious, and subject to all kinds of inhibitions—may fail to adapt to school and retire more and more into his own world. You may remember that about a year ago a boy at a public school committed suicide. The newspaper accounts showed him to be an extreme introvert, and a realisation of his temperamental difficulties by someone in a position to help might have prevented the tragedy.

The introvert teacher may suffer when facing the mass extroversion of his scholars; his doubts and over-scrupulousness will appear as vacillation and fussiness, but insight into himself will help him with the sensitive child when his opposite type might fail.

Whether child or grown-up the sufferer from a pathological fear or inhibition realises the absurdity of it. To laugh at it or force him to face it without sympathy is futile. The only way—short of special treatment—is to recognise it as of real importance, to assure him of that recognition, and then encourage him to carry on in spite of it. One of his character traits is reticence, and yet talking about his symptoms may greatly help to remove them. If you wish to get the confidence of the nervous person, child or adult, you must remember that he is overwhelmed by considerations of moral judgment, and if you show any signs of judging you will stop the flow of confidence.

One need not think the extrovert child escapes nervous troubles, but they are less likely to be complicated by his emotional view of them. He may show apparently isolated symptoms or present educational difficulties in the face of which he shows a cheerful detachment in contrast to the worrying reaction of the other.

I feel that I have left the subject rather in the air by dealing with principles instead of specific difficulties. I might have talked about the obvious, about regular meals, early hours, the avoidance of excitement and overwork, of the sin of frightening a child, and such like. But that was not what I set out to do. Perhaps the most important point I have tried to make is that we adults have to look into ourselves to find the cause of nervousness in the child.

PREVENTION OF VENEREAL DISEASE IN THE FRENCH ARMY.

IN France venereal disease is held by many to be not a subject for public discussion, but the recruit when accepted is given a preliminary pamphlet of information, a second when he is ordered to join his unit, and a third when he arrives in barracks, where, during his service, his officers and N.C.O.'s, and the regimental medical officer, all have chats with him and advise him, at the same time studying him to decide if he will make a good instructor for those who will follow him. Then there are notices in barracks and in the canteen, books in the regimental library, and various moral agencies. Certain police measures protect the recruit; women soliciting in the neighbourhood of barracks or in public-houses are arrested, also those suspected of having infected men. Major H. M. G. Jausion, of Val-de-Grâce, who offers much instructed comment in the *Archives de Médecine Militaires* for July, states that ablution cabinets, as advised in the United States, have been installed in barracks, but they are thought to have made little difference, and reliance is now placed on prophylactic packets of which there is a free issue available in barrack rooms. Men who are attacked are sought out at inspections, they are isolated and treated; uncomplicated gonorrhœas in the regimental infirmaries, those with complications in the urological sections of hospitals, and the syphilitic cases in the special wards of hospitals. Ulcers are not to be kept in regimental infirmaries, not even for making diagnosis sure; it is so important to begin treatment at once that they must be sent forward directly. These men are all taught the essential need for prolonged treatment. The bearing of early treatment on the time when marriage may be allowed is carefully considered in this paper, in which is also mentioned a method of administering arsenobenzol by the mouth. As in other armies, it is allowed that statistical facts about the success of prevention are difficult to secure.

A CONTORTIONIST.

THE trade of the contortionist in this country seems almost to have died out except for occasional street performances, and these are not always exhibitions of true skill and dexterity. On the other hand, there exist a large number of people, acrobats and ordinary folk, who claim to be "double-jointed." What this term means is not altogether clear. In many cases it means that owing to congenital laxity of the capsules or malformation of the articular surfaces certain joints may be partially dislocated at will. Whether this covers all cases of "double joints" and whether the ability can be acquired are some of the questions suggested by the appearance at various halls of entertainment in this country of Mr. Chester A. Kingston, who is an unusually supple contortionist. His father and mother were acrobats and contortionists, and he claims that the amazing pliancy, especially of the spinal column, is due entirely to training in very early life. A slight funnel-shaped depression of his sternum and a definite Harrison's sulcus suggest that possibly there were other factors. Although well over medium height and of a fine degree of muscular development he manages to get into a small box measuring 16 in. by 19¼ in. by 21 in. He also passes himself through hoops and backs of chairs fairly easily. Mr. Kingston was examined by certain members of the French medical profession during a recent visit to Paris, and while in London he has been X rayed at the Middlesex Hospital. Screen examination showed that an amazing rotation of the arm, for example, was not in the nature of a dislocation of the shoulder, but to a very remarkable range of scapula movement. X ray examination of some of Mr. Kingston's most remarkable positions was impossible for technical reasons, but attempts were made to get views of his vertebral column and also of his hip-joint, which present interesting features under the screen.

ADVERTISING HEALTH.

Mr. T. Crew, clerk to the Leicestershire Insurance Committee, has written a book called "Health Compendium and Health Publicity" (the Reader Printing Co., Sanvey Gate, Leicester. Pp. 260. 7*s*. 6*d*.) which gives a brief account of most of the societies working for the advancement of health in this country. The information is conveniently arranged for reference, and has a foreword by Prof. A. Bostock Hill, as well as short articles by Dr. C. J. Bond on Mental Hygiene, and by Dr. David Kirkhope on the Baby Week Movement.

"The problem before us to-day," says Mr. Crew, is "to interest the adult population, who, in many cases, are ready to believe that all health matters should be left to the constituted authority to deal with." He points to the tremendous success of commercial men in making people want things they have not wanted before, and considers that in "advertising health" the film and the poster are of immense value. The message of the poster may be either by words or pictures, but it must be bold and simple; Mr. Crew believes in the "small distinctive poster." Every page of his book is headed with a slogan—such as Bacteria Don't Like Soap—and the series is useful, though some of the examples would hardly be acceptable to the medical purist. Even more interesting, however, are the many reproductions of British and foreign posters used in health propaganda, and those who have to organise Health Weeks and the like will do well to look at them.

What is known about physiology and pathology does not always lend itself to didactic mass-instruction, and it is easy to criticise popular teaching on the ground that truth is often sacrificed to symmetrical theory. Moreover, as Prof. Hill implies, there is a lurking danger that we may become in time a race of sanitary prigs in whom health is an obsession. But the need for popular knowledge of hygiene is real and urgent, and although much can be done—and is best done—by the general practitioner, there is scope for an immense amount of propaganda by societies, hospitals, and municipalities; criticism of their endeavours, where it is needed, ought to be constructive only.

Mr. Crew's book appears at a time when its subject is much in people's minds, and many will find it interesting to peruse. It may not be out of place to recall that on Oct. 12th these questions are to be considered by the St. Pancras branch of the British Medical Association, which will meet at 9 P.M. at the Association's house in Tavistock-square to hear an address by Sir Thomas Horder on the Aims and Methods of Health Education.

HYGIENE IN THE TROPICS.

WE have already reviewed the first part of Dr. Mary Blacklock's excellent primer [1] and welcome the appearance of the second ("An Elementary Course in Tropical Hygiene." Part II. John Bale, Sons and Danielsson. Pp. 108, 2*s*. 6*d*.). As Dr. Andrew Balfour remarks in his preface, the rules of health which it commends "are those which should be practised by all who live under tropical conditions, and more especially by native school-children," and "although intended in the first instance for schools in tropical Africa, this carefully written and painstaking work will be of service to all teachers who have to impart a knowledge of those important matters on which so much depends, and which, even at the present day, are so often neglected."

The second part, like the first, is written in clear and simple English, the information is well selected, and the illustrations good. It is written as a text-book for older children, students in training colleges, junior sanitary officials, nurses, and the like, but it forms an introduction to medicine, more especially as practised in the tropics, which would be interesting to many whose reading is merely desultory. Tropical medicine is a fascinating subject, and here it is well presented to the layman.

THE PRINT COLLECTOR'S QUARTERLY.

THIS useful periodical will be issued from 1927 onward in the months of January, April, July, and October, and will be on sale early in the month of publication at the price of 17*s*. 6*d*. per annum or 5*s*. per number. The magazine was founded in 1911 in America, but it was transferred to England in 1921 to the house of Messrs. J. M. Dent and Sons, Ltd. The illustrations and catalogues will be found very useful to collectors and all who are interested in prints and drawings, old or modern.

"CALCARDS."

ONE of the difficulties of working out a diabetic diet successfully has been the mathematical calculations involved, which have thrown too great a strain on the leisure of the average practitioner and on the ingenuity of the average patient. During recent months various simplified systems have been evolved, notably the "line ration" scheme and the "five grain" scheme, which have wonderfully eased the burden of constructing a suitable dietary. "Calcards" (David Challen, Ltd., 10, City-road, London, E.C. 2*s*. 9*d*.) forms another such system. A box is supplied containing upwards of 150 cards with vertical rulings, giving for each food substance taken the protein, the carbohydrate, the fat-content, and the total calorific value. By grouping a number of these slips together it is possible to select a varied number of meals which fulfil the requirements which have been prescribed, the only mathematical process involved being simple addition. The figures are given in decimals to two places, and are sufficiently accurate, and for the principal articles of diet weights up to 7 oz. are given.

To diabetic patients and to athletes in training and others interested in balanced rationing, "Calcards" should be of considerable assistance in arranging a reliable and varied menu.

[1] THE LANCET, 1926, i., 1074.